

**سلسلة الابداع**

**المراجعة النهائية**

**الـجـبـر**

**الصف الثاني الثانوي ( علمي )**

**الاجابات النموذجية**

الصف: الثاني الثانوي (ع) سلة الابلع في الرياضيات علمي

اجابة السؤال الأول:

(1)  $(1-2-2)$  (2)  $2=3$  (3) فردية

(4)  $1 > 1 > 1$  (5)  $1 = 1$  (6)  $1 = 1$

(7)  $1 = 1$  (8)  $1 = 1$  (9)  $1 = 1$

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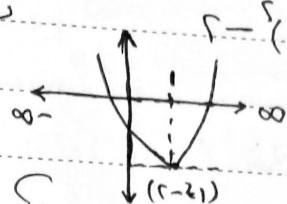
١ - ص = ص - ١

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نقطة الرأس (١ - ٢)



١ - ص = ص - ١

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تقريب خطها البياني من محور السينات كلما زادت قيمة ص.  
هذه الخاصية من خواص دالة التفاضل (الترسي).

١ - ص = ص - ١

١ - ص = ص - ١

(٢٣)  $\sqrt{p}$

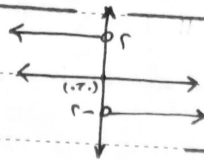
(٢٤) نقطة التقاطع  $(\frac{1}{2}, \frac{1}{2})$  فيكون مدى الدالة هو  $[-\frac{1}{2}, \frac{1}{2}]$   
لاحظ أنه مجال الدالة هو  $[-\frac{1}{2}, \frac{1}{2}]$

(٢٥) وص

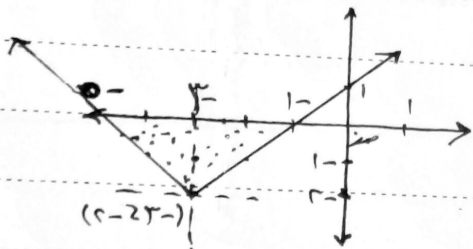
(٢٦)  $u = \sqrt{p}$

(٢٧)  $\therefore$  ص = لو  $(u, p-1)$  في النقطة  $(\frac{1}{2}, \frac{1}{2})$   $\therefore \frac{1}{2} = \frac{1}{p-1}$  لو  $(\frac{1}{2}, \frac{1}{2})$

$$\boxed{p=2} \quad \frac{1}{2} = p - \frac{1}{2} \quad \therefore \quad \frac{1}{2} = \frac{1}{p-1} = \frac{1}{2-1} = 2 - 1 = 1$$



(٢٨)  $(0, 2, 0)$



(٢٩) نقطة الرأس  $(2, -2, 2)$

طول (القاعدة)  $= |1+0-0| = 1$  الارتفاع  $= 2$   
 $\therefore$   $\underline{\underline{S}} = 2 \times 1 \times \frac{1}{2} = 1$  وحدة مربعة

(٣٠) الدالة الخارجية هي  $(u, p) = (u, 1-u)$

$$\frac{1}{u} = \frac{1}{u} + \frac{1}{u} = \frac{1}{u} + \frac{1}{u}$$

(٣١) د (u, 1-u) لو u  
لكن u يجب أن تكون موجبة  $\therefore u < 1$   
 $\therefore$  المجال  $0 < u < 1$



سلسلة الابداع في الرياضيات

الصف: الثاني المائوي

إحدى نقطتي تماثل الدالة  $y = (x+2)^2 - 1$  هي  $(-2, -1)$

$$\frac{1}{15} = (u) \cdot \dots \quad (11)$$

$$1 + \omega = (\omega) \rightarrow \{1\} - \{ \omega \}$$

$$\frac{1 - \sigma}{1 - \sigma} = (u\pi)2 \quad (38)$$

f = (11)  $\sim$  i  $\rightarrow$  x

ای املی = {۱} - {۲} = {۱}

⑤

$$r_1 \geq r_2 \geq r_3$$

$$1 \geq \omega \leq 1$$

1 2 3 4 5

$$[r_2] = 8.7 \therefore$$

اجزء فی النظام :  $3 - 5 < 5$

$$\frac{\sigma \rightarrow 0}{\sigma \rightarrow \infty} = (\sigma), \quad (37)$$

$$r > u \therefore u < r \therefore$$

(لاحظ عدم وجود التساوي في علاقة الشبكات)

$$]r? \infty - [ = \cup \mathbb{N} \therefore$$

صف (۷۳)

$$\frac{1}{\sqrt{c}} = \frac{1}{\sqrt{c}} = \frac{1}{\sqrt{c}} = \frac{1}{\sqrt{c}} = \frac{1}{\sqrt{c}} \quad (2n)$$

← 99 (29)

لاحظ دائما أنه مدى (الماتر المتأينة التي على الصورة  $P = (s)$ ) هو  $\{P\}$

71 cup

{ v } (Σ.)

وَمَا يَدْرَأُكَ غَيْرُ ذَلِكَ

2 (13)

$$\gamma(\overline{0}) = (\gamma(\overline{0})) = r_0 = 150$$

[illegible]

$$V(\overline{0V}) = (\overline{0V})^T (\overline{0V}) = \overline{0V} \cdot 150 \text{ gms}$$

$$\underline{\underline{\frac{1}{2} = \frac{1}{2} = 0.5}}$$

9-5-5

$$\sum_{k=0}^{\infty} \frac{1}{k!} = e$$

2 7-55  
5-55

$$17 = 2 - 5 \quad \text{EXF} \quad (24)$$

$$16 = 9$$

$$9 = 16$$

بتربيع الطرفين

$$16 = 9$$

معنا

$$25 = 9 + 16 = \frac{9}{4} + \frac{16}{4}$$

$$2 = (1-)$$

$$2 = (1-)$$

د دالة فردية

$$(2-1-)$$

$$2 = 5$$

$$1 = 5-2$$

صفر = لو (5-2)

يقطع محور السينات في النقطة (2- صفر)

ص = صفر

الصادرات

$$1 + 8 + 2 = 1 + 8 + \frac{1}{8} \times 8 = \left(\frac{1}{8}\right) + 3 - \left(\frac{1}{8}\right) + 9 \left(\frac{1}{8}\right) = 0.5 + (3-) + (2) 8 = 11 =$$

أصغار المقام

$$1 = 5$$

$$1 = 5$$

بها (الدالة)

ص < صفر

$$2 = (1+5) =$$

نقطة الرأس  
في محور السينات

$$2 = 5$$

$$2 = (5-)$$

$$[2, \infty[ \cap (1, 2) =$$

(٥٢) الصف : الثاني الثانوي

لکم جس لا یملکہ اے  $\bar{x} = 0$

جس لا یملکے  $x = 0$

$\{x\} = 0.2$

$x \pm 0.2$

$$(1-u) = 1 \text{ و } \left(\frac{r}{c}\right) \text{ و } \frac{1}{u} \text{ و } \frac{1}{u} \text{ و } 1-u \left(\frac{r}{c}\right) = (u) \text{ و } (0.5)$$

$\sigma_0 = \frac{1}{r_0} \therefore \sigma_0 = \frac{1}{150} \therefore \sigma_0 = \frac{1}{150} \therefore \sigma_0 = \frac{1}{150}$

٥٦)  $\sigma = \text{مقدار}$   $\sigma = \text{مقدار}$   $\sigma = \text{مقدار}$

السؤال الثاني:

$$(1) \quad (لوس) + (لوس) - 7 = صفر$$

$$r_{\text{exp}} = (r - \sigma_{\text{f}})(r + \sigma_{\text{f}})$$

$$\left\{ \frac{1}{\lambda} \right\} = \{ \frac{1}{\lambda} \} \quad \text{و} \quad \frac{1}{\lambda} = \frac{1}{\lambda} \quad \text{و} \quad \frac{1}{\lambda} = \frac{1}{\lambda}$$

$$v < |r - \omega s| \quad (5)$$

$$V > r - \sigma r \quad \text{if} \quad V < r - \sigma r$$

$\frac{1}{2} < \frac{1}{3}$        $\frac{1}{2} > \frac{1}{3}$

$$r \rightarrow \infty \quad \text{and} \quad 0 \leq r$$



$$\int_{-\infty}^{\infty} [U] r^{-2} dr = \left( \frac{4}{3} \right) [0] r^{-3} - \frac{2}{3} = \frac{2}{3}$$

السؤال الثالث:

①  $\leftarrow \begin{aligned} \text{د (س)} &= \text{س}^2 + |\text{س}| - 2 \\ \text{د (س)} &= (\text{س} - 1) + \text{س}^2 - 2 \\ \text{د (س)} &= \text{س}^2 + \text{س} - 1 \end{aligned}$

∴ الدالة زوجية

$\leftarrow \text{س}^2 + |\text{س}| - 2 = \text{صفر}$

$(\text{س}^2 + |\text{س}| - 2) = \text{صفر}$

$(\text{س} + 1)(\text{س} - 1) = 0$

إما  $\text{س} + 1 = 0$  أو  $\text{س} - 1 = 0$

∴  $\text{س} = -1$  أو  $\text{س} = 1$

∴  $\text{ج. ٣} = \{-1, 1\}$

مرفوض

حل آخر:

وهو بإعادة تعريف

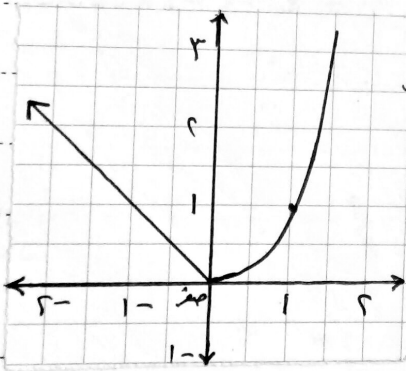
$\text{س}^2 + |\text{س}| - 2 = 0$

عندما  $\text{س} < 0$  ∴  $\text{س}^2 - \text{س} - 2 = 0$

$(\text{س} - 2)(\text{س} + 1) = 0$

$\text{س} = 2$  أو  $\text{س} = -1$

∴  $\text{ج. ٣} = \{-1, 1\}$



②  $\leftarrow \begin{aligned} \text{د (س)} &= \text{س}^2 \leq \text{صفر} \\ \text{د (س)} &= \text{س}^2 > \text{صفر} \end{aligned}$

المجال = ج

المدى =  $[\text{صفر}, \infty)$

الدالة متزايدة في  $[-\infty, \text{صفر}]$  متناقصية في  $[\text{صفر}, \infty)$

(الدالة ليست أحادية) (الدالة ليست زوجية وليست فردية)

السؤال الرابع:

①  $\frac{\text{لوس} - 2 - (\text{لوه})}{\text{لوه} - 2} = \frac{\text{لوه} - (\text{لوه})}{\text{لوه} - 1} = \frac{2 - (\text{لوه})}{\text{لوه} - 2}$

∴  $\text{لوس} = \frac{(\text{لوه} - 2)(\text{لوه})}{(\text{لوه} - 2)} = \text{لوه}$

∴  $\text{س} = 0$  ∴  $\text{س} = \frac{1}{0}$

∴  $\text{ج. ٣} = \{\frac{1}{0}\}$



سابع السؤال الرابع:

⑤ د. (س) =  $\frac{1}{س}$

ص. (س) =  $س + ٣$

المجال =  $س - \{٣\}$

د. (س) = (س) ص. (س) =  $\frac{1}{س + ٣}$

المجال =  $س - \{٠\}$

ص. (س) = (س) د. (س) =  $٣ + \frac{1}{س}$

⑥ X

$١٧ = \frac{٤}{س٤} + ٤ \times س٤$

السؤال الخامس:

①  $١٧ = س٤ + ١ + \frac{١}{س٤}$

$\therefore ١٧ = س٤ + ١ + \frac{١}{س٤}$   $\therefore ١٧ - (س٤) = ١ + \frac{١}{س٤}$

$\therefore (١٧ - س٤) \times س٤ = (١ + \frac{١}{س٤}) \times س٤$

$١٧س٤ - س٨ = س٤ + ١$   $\therefore ١٧س٤ - س٨ - س٤ - ١ = ٠$

$١٦س٤ - س٨ - ١ = ٠$   $\therefore ١٦س٤ - س٨ = ١$

$\therefore س٤ = \frac{١}{١٦ - س٨}$

$١ - س٤ = ٠$

⑤ لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

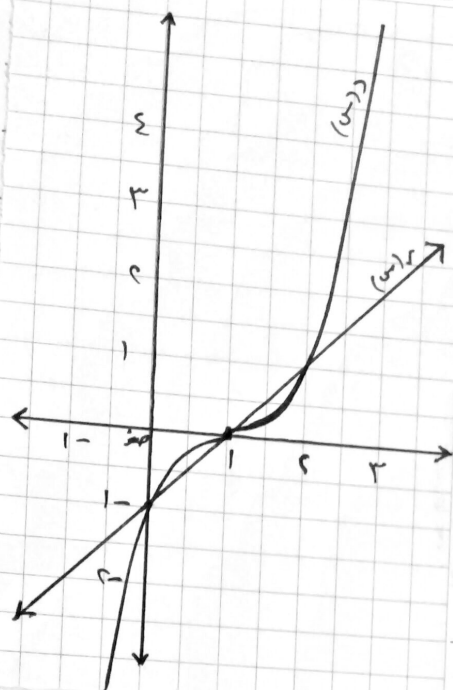
$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$

$\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$   $\therefore$  لو (س) =  $(س - ٨) + (٦ - س)$



①

$$D(0, -1) = (0, -1) \text{ صفر}$$

$$D(1, 0) = (1, 0)$$

مجموعة حل هذه المعادلة عند نقط التقاطع  
وهي النقط التي تتساوى فيها الدالتين

$$\therefore \{0, 1\} = \text{ح.م}$$

$$\sqrt{x-2} = x \quad \text{②}$$

لايجاد الدالة العكسية

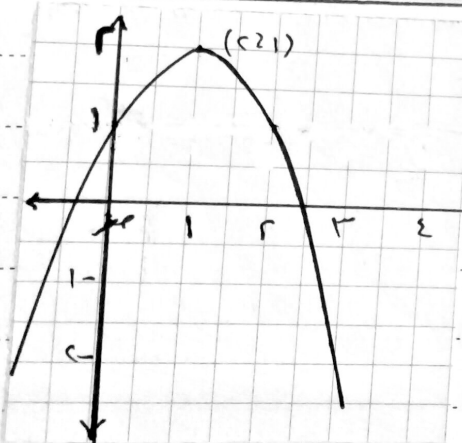
$$\sqrt{x-2} = x$$

بتكبير الطرفين

$$x-2 = x^2$$

$$x^2 - x + 2 = 0$$

$$\therefore D(1, 0) = (1, 0)$$



السؤال السابع: ①  $D(1, 0) = (1, 0)$

$$\therefore D(1, 0) = (1, 0)$$

$$[2, \infty) = \text{المدى}$$

\* الدالة تزايدية في  $[-1, \infty)$  وتناقصية في  $(\infty, 1]$

\* الدالة ليست زوجية وليست فردية

$$\text{②} \quad \therefore \text{لو لو لو} = (1+x, 2) = \text{صفر}$$

$$\therefore \text{لو لو} = (1+x, 2) = 1 \quad \therefore \text{لو} = (1+x, 2) = 1$$

$$\therefore 1+x = 9 \quad \therefore x = 8$$

$$\therefore x = 8 \quad \therefore x = 8$$

$$\therefore \{8\} = \text{ح.م}$$

الصف: الثاني الثانوي

السؤال الثامن:

①  $|x-1| = |x-4|$

∴  $x-1 = x-4$  أو  $x-1 = -(x-4)$

∴  $x-1 = x-4$  أو  $x-1 = -x+4$

∴  $x-1 = x-4$  أو  $x-1 = -x+4$

∴  $x=1$

∴  $\{1\}$

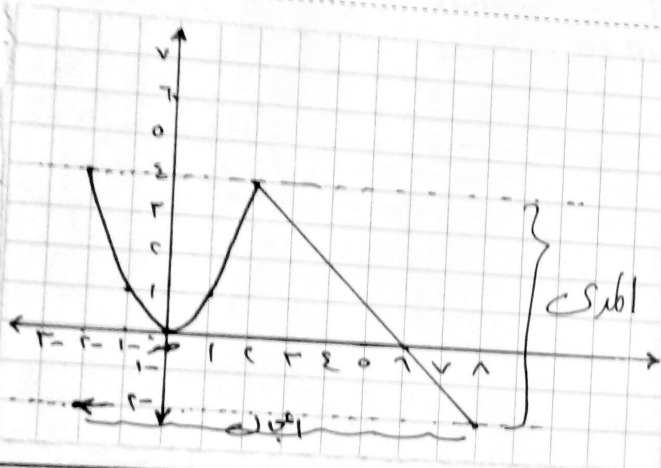
② مدى الدالة  $[2, 4]$

الدالة تزايدية  $[2, 4]$

تناقصية  $[4, 2]$

$[2, 4]$

لاحظ أنه الجواب هو  $[2, 4]$



③  $7 \geq |x-2| - |x-5|$

$7 \geq |x-2| - |x-5|$

$7 \geq |x-2|$

$3 \geq |x-2|$

$3 \geq x-2 \geq 2-x$

$7 \geq x \geq 5$

∴  $\{x\} = [5, 7]$

السؤال التاسع:

①  $|x-1| = |x+2|$

$x-1 = x+2$  أو  $x-1 = -(x+2)$

$x-1 = x+2$  أو  $x-1 = -x-2$

$x-1 = x+2$  أو  $x-1 = -x-2$

$x-1 = x+2$  أو  $x-1 = -x-2$

$x=1$

X

∴  $\{1\}$

②  $\frac{5-x^2}{x-2} = (x-1)$

بفرض أن  $D(P) = D(Q)$

$(x-1)(5-x^2) = (x-2)(x-1)$  ∴  $\frac{5-x^2}{x-1} = \frac{x-2}{x-1}$

$5-x^2 = x-2$  ∴  $x^2+x-7=0$

∴  $x^2+x-7=0$  ∴  $x=2$  ∴ الدالة أحادية



السؤال العاشر :

$$\frac{1}{3} = \frac{1}{27} = \frac{0-5}{3} \quad \therefore$$

$$3 = 0-5 \quad \therefore$$

$$1 = (0-5) \cdot 27 \quad \text{①}$$

$$\{1\} = \text{ح. م.}$$

$$2 = 5 \quad \therefore$$

$$\frac{7}{5+|5-1|} = 2 \quad \therefore$$

$$\frac{7}{2+|5-1|} = 2 \quad \text{②}$$

الدالة زوجية

$$2 = \frac{7}{2+|5-1|} = 2 \quad \therefore$$

حل المعادلة

$$3 = 2+|5-1| \quad \therefore$$

$$2 = \frac{7}{2+|5-1|} \quad \therefore$$

$$|5-1| = 4 \quad \therefore$$

$$1 = |5-1| \quad \therefore$$

$$\{1, -1\} = \text{ح. م.}$$

السؤال الحادي عشر :

$$\text{①} \quad \therefore \text{الأعين} = 2 \text{ لو } 5 + 4 \text{ لو } 5 - 1 \text{ لو } 5 = 2 \text{ لو } 5 + 2 \text{ لو } 5 - 1 \text{ لو } 5$$

$$= 2 \text{ لو } 5 + 2 \text{ لو } 5 - 1 \text{ لو } 5$$

$$= 2 \text{ لو } 5 + 2 \text{ لو } 5 - 1 \text{ لو } 5$$

$$= 2 \text{ لو } 5 + 2 \text{ لو } 5 - 1 \text{ لو } 5$$

$$\therefore 2 \text{ لو } 5 + 2 \text{ لو } 5 - 1 \text{ لو } 5 = 2 \text{ لو } 5 + 2 \text{ لو } 5 - 1 \text{ لو } 5$$

$$16 = 5 \text{ لو } 5$$

$$= 16$$

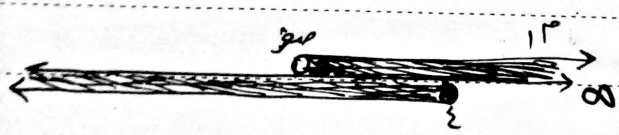
$$\text{①} \quad + \text{ ح. م.} = 16$$

$$[2 \text{ ح. م.}] = 16$$

$$2 \text{ ح. م.} + 2 \text{ ح. م.} = 16$$

$$[2 \text{ ح. م.}] = (2 \text{ ح. م.}) \oplus \text{ ح. م.} \sim \text{ لا } \sim \text{ ح. م.}$$

$$\underline{\underline{2}} = 16 + (1)2 = (1) (2+1)$$





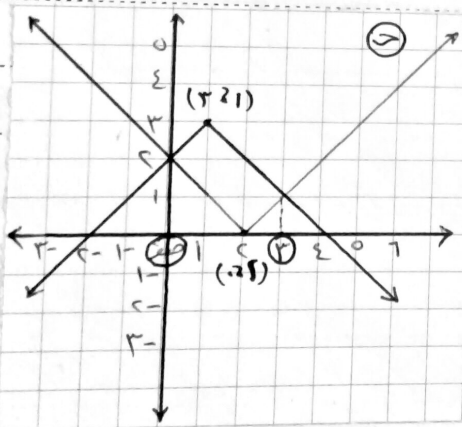
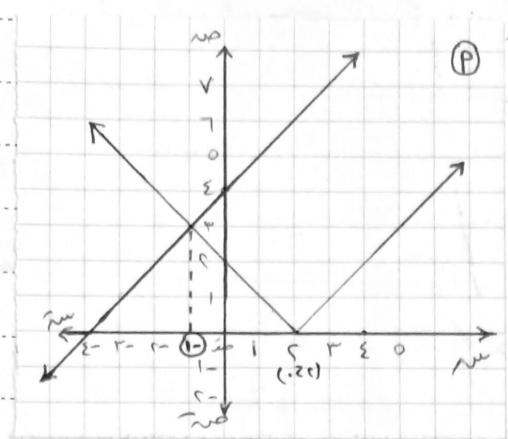
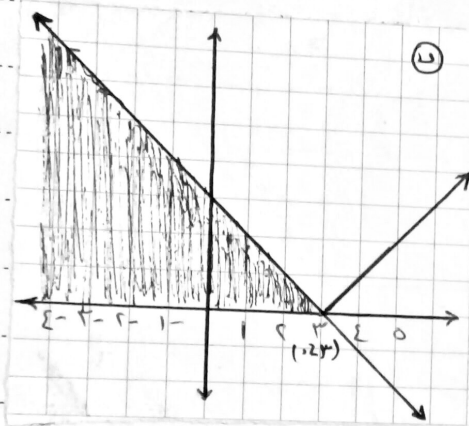
السؤال الثاني عشر:

$$\frac{0}{49} = (1 + \sqrt{2})x + (1 - \sqrt{2})y \quad (1) \quad \text{نضرب في } \sqrt{2} \Rightarrow \frac{0}{49} = \sqrt{2} + 2x + \sqrt{2} - 2y$$

$$\frac{0}{49} = (2 + \sqrt{2})x - 2y \quad (2) \quad \text{نضرب في } \frac{1}{\sqrt{2}} \Rightarrow \frac{0}{49} = \sqrt{2} + 2x - 2y$$

$$\frac{0}{49} = \left(2 + \frac{1}{\sqrt{2}}\right) \sqrt{2}x - 2y \quad (3) \quad \text{نضرب في } \frac{1}{\sqrt{2}} \Rightarrow \frac{0}{49} = \sqrt{2} + 2x - 2y$$

$$\frac{1}{\sqrt{2}} = \sqrt{2} \Rightarrow 1 = 2 \quad \text{نضرب في } \sqrt{2} \Rightarrow \frac{1}{\sqrt{2}} = \sqrt{2} \Rightarrow 1 = 2$$



① مجموعة حل المعادلة  $|x-2| = |x+2|$  هو  $\{1\}$

② مجموعة حل المعادلة  $|x-2| = |x+2|$  هو  $[2, \infty)$

③ مجموعة حل المعادلة  $|x-2| = |x+2|$  هو  $\{2\}$

نفسه (بالنسبة)  $|x-2| = |x+2|$  هو  $\{2\}$

ونجد من الرسم أنه الخط هو  $\{2\}$  فقط

السؤال الثالث عشر:

$$x = 120 + (50 - x) \cdot 20$$

$$x = (50 - x) \cdot 20$$

$$x = 50 \quad \text{أو} \quad x = 120$$

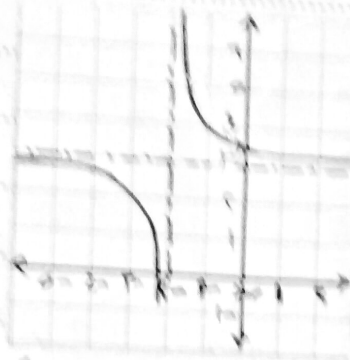
$$\{120\} = 8.2 \quad \text{أو} \quad x = 1 \quad \text{أو} \quad x = 3$$

$$(1) \quad x = \frac{120}{50} + 50$$

$$x = 120 + (50 - x) \cdot 20$$

سؤال 10

$$11 = 3x^2 + 2 = (2x)^2 + (1)^2 \quad (1)$$



$$2 + \frac{1}{x+2} = \frac{1}{x+2} = 2 \Rightarrow (x+2) = 1 \quad (2)$$

نقلنا المعادلة (2) إلى

$$\{x+2\} = 1$$

$$\{x\} = -1$$

المعادلة تتحقق على مجالها. دالة ليست زوجية وليست فردية. دالة غير متماثلة.

$$\frac{(1-0+2+0)}{(1-0)^2+0} = \frac{2+0-0}{0-0} = \text{قيمة مقدار} \quad (3)$$

$$\frac{1}{0} = \frac{1}{0} = \frac{2-0+0}{0} =$$

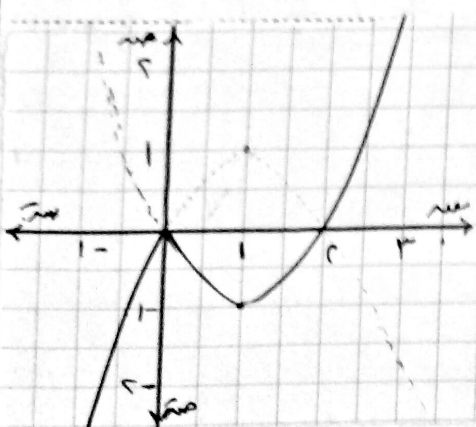
السؤال الخامس عشر

$$\frac{(2)12}{(2)6} + (2) = \frac{24 \times 2}{2} + (2) = \frac{48}{2} + (2) = 24 + (2) = 26 \quad (4)$$

$$(2) + (2) = \frac{2}{1} + (2) =$$

$$1 + (2) = (2) + (2) =$$

$$= 4 =$$



$$\left. \begin{array}{l} x < 1 \\ x > 2 \end{array} \right\} \begin{array}{l} (2-x) \\ (x-2) \end{array} = (x) \quad (5)$$

$$\left. \begin{array}{l} 1-(1-x) \\ 1+(1-x) \end{array} \right\} \begin{array}{l} x-1 \\ x+1 \end{array} = (x) \quad (6)$$

المعادلة =

تابع: السؤال (١٥) ②

$$\binom{9 \times 8 \times 7}{12} = \binom{9}{12} + \binom{8}{12} + \binom{7}{12} = \frac{1}{\binom{12}{9}} + \frac{1}{\binom{12}{8}} + \frac{1}{\binom{12}{7}}$$

$$\frac{1}{\binom{12}{9}} = \frac{1}{\binom{12}{3}} = \frac{1}{165} \quad \frac{1}{\binom{12}{8}} = \frac{1}{\binom{12}{4}} = \frac{1}{35} \quad \frac{1}{\binom{12}{7}} = \frac{1}{\binom{12}{5}} = \frac{1}{252}$$

$$\frac{1}{165} + \frac{1}{35} + \frac{1}{252} = \frac{4}{165} + \frac{4}{165} + \frac{1}{165} = \frac{9}{165} = \frac{3}{55}$$

السؤال السادس عشر:

①  $75 = 5 \times 3^3 \rightarrow ①$   $50 = 2 \times 5^2 \rightarrow ②$

بقسمة ① ÷ ②

$$\frac{75}{50} = \frac{5 \times 3^3}{2 \times 5^2} \Rightarrow \frac{3}{2} = \frac{3^3}{5}$$

$$\frac{3}{2} = \frac{27}{5} \Rightarrow 15 = 54 \Rightarrow 15 = 54 \Rightarrow 15 = 54$$

بضرب ② × ①

$$50 \times 75 = 2 \times 5^2 \times 5 \times 3^3 = 2 \times 5^3 \times 3^3 = 2 \times 125 \times 27 = 6750$$

③  $1 = 5 - 4$

اجمع ②، ③

$$15 = 5 \times 3 \Rightarrow 15 = 5 \times 3 \Rightarrow 15 = 5 \times 3$$

بأخذ لوغاريتم الطرفين

$$\log(15) = \log(5 \times 3) \Rightarrow \log(15) = \log(5) + \log(3)$$

$$\log(15) = \log(5) + \log(3) \Rightarrow \log(15) = \log(5) + \log(3)$$

السؤال السابع عشر:

①  $12 = 2^2 \times 3 = 2 \times 2 \times 3$

$12 = 2^2 \times 3 = 2 \times 2 \times 3$

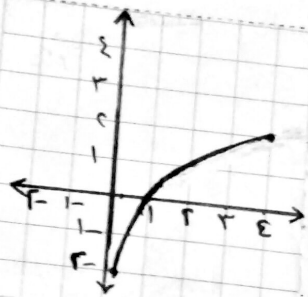
$12 = 2^2 \times 3 = 2 \times 2 \times 3$

$12 = 2^2 \times 3 = 2 \times 2 \times 3$

$12 = 2^2 \times 3 = 2 \times 2 \times 3$

$12 = 2^2 \times 3 = 2 \times 2 \times 3$



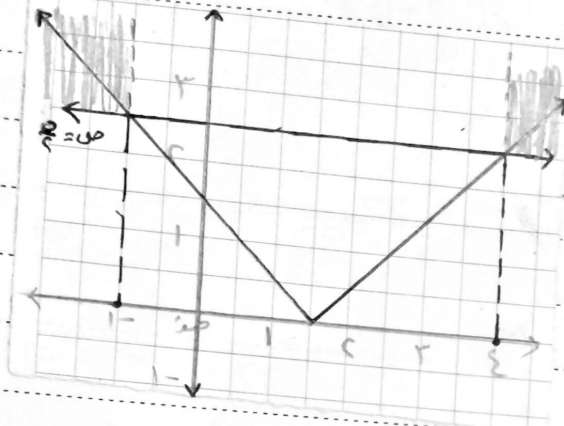


تابع السؤال السابع عشر :  
 ① (٢٣٤) تحقق معادلة المثلثي :  $\frac{1}{p} = \frac{1}{q} + \frac{1}{r}$   $\frac{1}{2} = \frac{1}{3} + \frac{1}{6}$   $\frac{1}{4} = \frac{1}{5} + \frac{1}{20}$

٤	٣	٢	١	$\frac{1}{2}$	$\frac{1}{3}$	٥
٢		١	صفر	١	٢	٥

السؤال الثامن عشر :  
 ① :  $\frac{1}{2} = \frac{1}{3} + \frac{1}{6}$   $\frac{1}{4} = \frac{1}{5} + \frac{1}{20}$   $\frac{1}{6} = \frac{1}{7} + \frac{1}{42}$   $\frac{1}{8} = \frac{1}{9} + \frac{1}{72}$   $\frac{1}{10} = \frac{1}{11} + \frac{1}{110}$   $\frac{1}{12} = \frac{1}{13} + \frac{1}{156}$   $\frac{1}{14} = \frac{1}{15} + \frac{1}{210}$   $\frac{1}{16} = \frac{1}{17} + \frac{1}{272}$   $\frac{1}{18} = \frac{1}{19} + \frac{1}{342}$   $\frac{1}{20} = \frac{1}{21} + \frac{1}{420}$   $\frac{1}{22} = \frac{1}{23} + \frac{1}{506}$   $\frac{1}{24} = \frac{1}{25} + \frac{1}{600}$   $\frac{1}{26} = \frac{1}{27} + \frac{1}{702}$   $\frac{1}{28} = \frac{1}{29} + \frac{1}{812}$   $\frac{1}{30} = \frac{1}{31} + \frac{1}{930}$   $\frac{1}{32} = \frac{1}{33} + \frac{1}{1056}$   $\frac{1}{34} = \frac{1}{35} + \frac{1}{1190}$   $\frac{1}{36} = \frac{1}{37} + \frac{1}{1332}$   $\frac{1}{38} = \frac{1}{39} + \frac{1}{1482}$   $\frac{1}{40} = \frac{1}{41} + \frac{1}{1640}$   $\frac{1}{42} = \frac{1}{43} + \frac{1}{1806}$   $\frac{1}{44} = \frac{1}{45} + \frac{1}{1980}$   $\frac{1}{46} = \frac{1}{47} + \frac{1}{2182}$   $\frac{1}{48} = \frac{1}{49} + \frac{1}{2400}$   $\frac{1}{50} = \frac{1}{51} + \frac{1}{2610}$   $\frac{1}{52} = \frac{1}{53} + \frac{1}{2828}$   $\frac{1}{54} = \frac{1}{55} + \frac{1}{3060}$   $\frac{1}{56} = \frac{1}{57} + \frac{1}{3304}$   $\frac{1}{58} = \frac{1}{59} + \frac{1}{3552}$   $\frac{1}{60} = \frac{1}{61} + \frac{1}{3804}$   $\frac{1}{62} = \frac{1}{63} + \frac{1}{4068}$   $\frac{1}{64} = \frac{1}{65} + \frac{1}{4344}$   $\frac{1}{66} = \frac{1}{67} + \frac{1}{4632}$   $\frac{1}{68} = \frac{1}{69} + \frac{1}{4932}$   $\frac{1}{70} = \frac{1}{71} + \frac{1}{5244}$   $\frac{1}{72} = \frac{1}{73} + \frac{1}{5568}$   $\frac{1}{74} = \frac{1}{75} + \frac{1}{5904}$   $\frac{1}{76} = \frac{1}{77} + \frac{1}{6252}$   $\frac{1}{78} = \frac{1}{79} + \frac{1}{6612}$   $\frac{1}{80} = \frac{1}{81} + \frac{1}{6984}$   $\frac{1}{82} = \frac{1}{83} + \frac{1}{7368}$   $\frac{1}{84} = \frac{1}{85} + \frac{1}{7764}$   $\frac{1}{86} = \frac{1}{87} + \frac{1}{8172}$   $\frac{1}{88} = \frac{1}{89} + \frac{1}{8592}$   $\frac{1}{90} = \frac{1}{91} + \frac{1}{9024}$   $\frac{1}{92} = \frac{1}{93} + \frac{1}{9468}$   $\frac{1}{94} = \frac{1}{95} + \frac{1}{9924}$   $\frac{1}{96} = \frac{1}{97} + \frac{1}{10392}$   $\frac{1}{98} = \frac{1}{99} + \frac{1}{10872}$   $\frac{1}{100} = \frac{1}{101} + \frac{1}{11364}$   $\frac{1}{102} = \frac{1}{103} + \frac{1}{11868}$   $\frac{1}{104} = \frac{1}{105} + \frac{1}{12384}$   $\frac{1}{106} = \frac{1}{107} + \frac{1}{12912}$   $\frac{1}{108} = \frac{1}{109} + \frac{1}{13452}$   $\frac{1}{110} = \frac{1}{111} + \frac{1}{14004}$   $\frac{1}{112} = \frac{1}{113} + \frac{1}{14568}$   $\frac{1}{114} = \frac{1}{115} + \frac{1}{15144}$   $\frac{1}{116} = \frac{1}{117} + \frac{1}{15732}$   $\frac{1}{118} = \frac{1}{119} + \frac{1}{16332}$   $\frac{1}{120} = \frac{1}{121} + \frac{1}{16944}$   $\frac{1}{122} = \frac{1}{123} + \frac{1}{17568}$   $\frac{1}{124} = \frac{1}{125} + \frac{1}{18204}$   $\frac{1}{126} = \frac{1}{127} + \frac{1}{18852}$   $\frac{1}{128} = \frac{1}{129} + \frac{1}{19512}$   $\frac{1}{130} = \frac{1}{131} + \frac{1}{20184}$   $\frac{1}{132} = \frac{1}{133} + \frac{1}{20868}$   $\frac{1}{134} = \frac{1}{135} + \frac{1}{21564}$   $\frac{1}{136} = \frac{1}{137} + \frac{1}{22272}$   $\frac{1}{138} = \frac{1}{139} + \frac{1}{22992}$   $\frac{1}{140} = \frac{1}{141} + \frac{1}{23724}$   $\frac{1}{142} = \frac{1}{143} + \frac{1}{24468}$   $\frac{1}{144} = \frac{1}{145} + \frac{1}{25224}$   $\frac{1}{146} = \frac{1}{147} + \frac{1}{25992}$   $\frac{1}{148} = \frac{1}{149} + \frac{1}{26772}$   $\frac{1}{150} = \frac{1}{151} + \frac{1}{27564}$   $\frac{1}{152} = \frac{1}{153} + \frac{1}{28368}$   $\frac{1}{154} = \frac{1}{155} + \frac{1}{29184}$   $\frac{1}{156} = \frac{1}{157} + \frac{1}{29992}$   $\frac{1}{158} = \frac{1}{159} + \frac{1}{30812}$   $\frac{1}{160} = \frac{1}{161} + \frac{1}{31644}$   $\frac{1}{162} = \frac{1}{163} + \frac{1}{32488}$   $\frac{1}{164} = \frac{1}{165} + \frac{1}{33344}$   $\frac{1}{166} = \frac{1}{167} + \frac{1}{34212}$   $\frac{1}{168} = \frac{1}{169} + \frac{1}{35092}$   $\frac{1}{170} = \frac{1}{171} + \frac{1}{35984}$   $\frac{1}{172} = \frac{1}{173} + \frac{1}{36888}$   $\frac{1}{174} = \frac{1}{175} + \frac{1}{37804}$   $\frac{1}{176} = \frac{1}{177} + \frac{1}{38732}$   $\frac{1}{178} = \frac{1}{179} + \frac{1}{39672}$   $\frac{1}{180} = \frac{1}{181} + \frac{1}{40624}$   $\frac{1}{182} = \frac{1}{183} + \frac{1}{41588}$   $\frac{1}{184} = \frac{1}{185} + \frac{1}{42564}$   $\frac{1}{186} = \frac{1}{187} + \frac{1}{43552}$   $\frac{1}{188} = \frac{1}{189} + \frac{1}{44552}$   $\frac{1}{190} = \frac{1}{191} + \frac{1}{45564}$   $\frac{1}{192} = \frac{1}{193} + \frac{1}{46588}$   $\frac{1}{194} = \frac{1}{195} + \frac{1}{47624}$   $\frac{1}{196} = \frac{1}{197} + \frac{1}{48672}$   $\frac{1}{198} = \frac{1}{199} + \frac{1}{49732}$   $\frac{1}{200} = \frac{1}{201} + \frac{1}{50804}$   $\frac{1}{202} = \frac{1}{203} + \frac{1}{51888}$   $\frac{1}{204} = \frac{1}{205} + \frac{1}{52984}$   $\frac{1}{206} = \frac{1}{207} + \frac{1}{54092}$   $\frac{1}{208} = \frac{1}{209} + \frac{1}{55212}$   $\frac{1}{210} = \frac{1}{211} + \frac{1}{56344}$   $\frac{1}{212} = \frac{1}{213} + \frac{1}{57488}$   $\frac{1}{214} = \frac{1}{215} + \frac{1}{58644}$   $\frac{1}{216} = \frac{1}{217} + \frac{1}{59812}$   $\frac{1}{218} = \frac{1}{219} + \frac{1}{60992}$   $\frac{1}{220} = \frac{1}{221} + \frac{1}{62184}$   $\frac{1}{222} = \frac{1}{223} + \frac{1}{63388}$   $\frac{1}{224} = \frac{1}{225} + \frac{1}{64604}$   $\frac{1}{226} = \frac{1}{227} + \frac{1}{65832}$   $\frac{1}{228} = \frac{1}{229} + \frac{1}{67072}$   $\frac{1}{230} = \frac{1}{231} + \frac{1}{68324}$   $\frac{1}{232} = \frac{1}{233} + \frac{1}{69588}$   $\frac{1}{234} = \frac{1}{235} + \frac{1}{70864}$   $\frac{1}{236} = \frac{1}{237} + \frac{1}{72152}$   $\frac{1}{238} = \frac{1}{239} + \frac{1}{73452}$   $\frac{1}{240} = \frac{1}{241} + \frac{1}{74764}$   $\frac{1}{242} = \frac{1}{243} + \frac{1}{76088}$   $\frac{1}{244} = \frac{1}{245} + \frac{1}{77424}$   $\frac{1}{246} = \frac{1}{247} + \frac{1}{78772}$   $\frac{1}{248} = \frac{1}{249} + \frac{1}{80132}$   $\frac{1}{250} = \frac{1}{251} + \frac{1}{81504}$   $\frac{1}{252} = \frac{1}{253} + \frac{1}{82888}$   $\frac{1}{254} = \frac{1}{255} + \frac{1}{84284}$   $\frac{1}{256} = \frac{1}{257} + \frac{1}{85692}$   $\frac{1}{258} = \frac{1}{259} + \frac{1}{87112}$   $\frac{1}{260} = \frac{1}{261} + \frac{1}{88544}$   $\frac{1}{262} = \frac{1}{263} + \frac{1}{89988}$   $\frac{1}{264} = \frac{1}{265} + \frac{1}{91444}$   $\frac{1}{266} = \frac{1}{267} + \frac{1}{92912}$   $\frac{1}{268} = \frac{1}{269} + \frac{1}{94392}$   $\frac{1}{270} = \frac{1}{271} + \frac{1}{95884}$   $\frac{1}{272} = \frac{1}{273} + \frac{1}{97388}$   $\frac{1}{274} = \frac{1}{275} + \frac{1}{98904}$   $\frac{1}{276} = \frac{1}{277} + \frac{1}{100432}$   $\frac{1}{278} = \frac{1}{279} + \frac{1}{101972}$   $\frac{1}{280} = \frac{1}{281} + \frac{1}{103524}$   $\frac{1}{282} = \frac{1}{283} + \frac{1}{105088}$   $\frac{1}{284} = \frac{1}{285} + \frac{1}{106664}$   $\frac{1}{286} = \frac{1}{287} + \frac{1}{108252}$   $\frac{1}{288} = \frac{1}{289} + \frac{1}{109852}$   $\frac{1}{290} = \frac{1}{291} + \frac{1}{111464}$   $\frac{1}{292} = \frac{1}{293} + \frac{1}{113088}$   $\frac{1}{294} = \frac{1}{295} + \frac{1}{114724}$   $\frac{1}{296} = \frac{1}{297} + \frac{1}{116372}$   $\frac{1}{298} = \frac{1}{299} + \frac{1}{118032}$   $\frac{1}{300} = \frac{1}{301} + \frac{1}{119704}$   $\frac{1}{302} = \frac{1}{303} + \frac{1}{121388}$   $\frac{1}{304} = \frac{1}{305} + \frac{1}{123084}$   $\frac{1}{306} = \frac{1}{307} + \frac{1}{124792}$   $\frac{1}{308} = \frac{1}{309} + \frac{1}{126512}$   $\frac{1}{310} = \frac{1}{311} + \frac{1}{128244}$   $\frac{1}{312} = \frac{1}{313} + \frac{1}{129988}$   $\frac{1}{314} = \frac{1}{315} + \frac{1}{131744}$   $\frac{1}{316} = \frac{1}{317} + \frac{1}{133512}$   $\frac{1}{318} = \frac{1}{319} + \frac{1}{135292}$   $\frac{1}{320} = \frac{1}{321} + \frac{1}{137084}$   $\frac{1}{322} = \frac{1}{323} + \frac{1}{138888}$   $\frac{1}{324} = \frac{1}{325} + \frac{1}{140704}$   $\frac{1}{326} = \frac{1}{327} + \frac{1}{142532}$   $\frac{1}{328} = \frac{1}{329} + \frac{1}{144372}$   $\frac{1}{330} = \frac{1}{331} + \frac{1}{146224}$   $\frac{1}{332} = \frac{1}{333} + \frac{1}{148088}$   $\frac{1}{334} = \frac{1}{335} + \frac{1}{149964}$   $\frac{1}{336} = \frac{1}{337} + \frac{1}{151852}$   $\frac{1}{338} = \frac{1}{339} + \frac{1}{153752}$   $\frac{1}{340} = \frac{1}{341} + \frac{1}{155664}$   $\frac{1}{342} = \frac{1}{343} + \frac{1}{157588}$   $\frac{1}{344} = \frac{1}{345} + \frac{1}{159524}$   $\frac{1}{346} = \frac{1}{347} + \frac{1}{161472}$   $\frac{1}{348} = \frac{1}{349} + \frac{1}{163432}$   $\frac{1}{350} = \frac{1}{351} + \frac{1}{165404}$   $\frac{1}{352} = \frac{1}{353} + \frac{1}{167388}$   $\frac{1}{354} = \frac{1}{355} + \frac{1}{169384}$   $\frac{1}{356} = \frac{1}{357} + \frac{1}{171392}$   $\frac{1}{358} = \frac{1}{359} + \frac{1}{173412}$   $\frac{1}{360} = \frac{1}{361} + \frac{1}{175444}$   $\frac{1}{362} = \frac{1}{363} + \frac{1}{177488}$   $\frac{1}{364} = \frac{1}{365} + \frac{1}{179544}$   $\frac{1}{366} = \frac{1}{367} + \frac{1}{181612}$   $\frac{1}{368} = \frac{1}{369} + \frac{1}{183692}$   $\frac{1}{370} = \frac{1}{371} + \frac{1}{185784}$   $\frac{1}{372} = \frac{1}{373} + \frac{1}{187888}$   $\frac{1}{374} = \frac{1}{375} + \frac{1}{189904}$   $\frac{1}{376} = \frac{1}{377} + \frac{1}{191932}$   $\frac{1}{378} = \frac{1}{379} + \frac{1}{193972}$   $\frac{1}{380} = \frac{1}{381} + \frac{1}{196024}$   $\frac{1}{382} = \frac{1}{383} + \frac{1}{198088}$   $\frac{1}{384} = \frac{1}{385} + \frac{1}{200164}$   $\frac{1}{386} = \frac{1}{387} + \frac{1}{202252}$   $\frac{1}{388} = \frac{1}{389} + \frac{1}{204352}$   $\frac{1}{390} = \frac{1}{391} + \frac{1}{206464}$   $\frac{1}{392} = \frac{1}{393} + \frac{1}{208588}$   $\frac{1}{394} = \frac{1}{395} + \frac{1}{210724}$   $\frac{1}{396} = \frac{1}{397} + \frac{1}{212872}$   $\frac{1}{398} = \frac{1}{399} + \frac{1}{215032}$   $\frac{1}{400} = \frac{1}{401} + \frac{1}{217204}$   $\frac{1}{402} = \frac{1}{403} + \frac{1}{219388}$   $\frac{1}{404} = \frac{1}{405} + \frac{1}{221584}$   $\frac{1}{406} = \frac{1}{407} + \frac{1}{223792}$   $\frac{1}{408} = \frac{1}{409} + \frac{1}{226012}$   $\frac{1}{410} = \frac{1}{411} + \frac{1}{228244}$   $\frac{1}{412} = \frac{1}{413} + \frac{1}{230488}$   $\frac{1}{414} = \frac{1}{415} + \frac{1}{232744}$   $\frac{1}{416} = \frac{1}{417} + \frac{1}{235012}$   $\frac{1}{418} = \frac{1}{419} + \frac{1}{237292}$   $\frac{1}{420} = \frac{1}{421} + \frac{1}{239584}$   $\frac{1}{422} = \frac{1}{423} + \frac{1}{241888}$   $\frac{1}{424} = \frac{1}{425} + \frac{1}{244204}$   $\frac{1}{426} = \frac{1}{427} + \frac{1}{246532}$   $\frac{1}{428} = \frac{1}{429} + \frac{1}{248872}$   $\frac{1}{430} = \frac{1}{431} + \frac{1}{251224}$   $\frac{1}{432} = \frac{1}{433} + \frac{1}{253588}$   $\frac{1}{434} = \frac{1}{435} + \frac{1}{255964}$   $\frac{1}{436} = \frac{1}{437} + \frac{1}{258352}$   $\frac{1}{438} = \frac{1}{439} + \frac{1}{260752}$   $\frac{1}{440} = \frac{1}{441} + \frac{1}{263164}$   $\frac{1}{442} = \frac{1}{443} + \frac{1}{265588}$   $\frac{1}{444} = \frac{1}{445} + \frac{1}{268024}$   $\frac{1}{446} = \frac{1}{447} + \frac{1}{270472}$   $\frac{1}{448} = \frac{1}{449} + \frac{1}{272932}$   $\frac{1}{450} = \frac{1}{451} + \frac{1}{275404}$   $\frac{1}{452} = \frac{1}{453} + \frac{1}{277888}$   $\frac{1}{454} = \frac{1}{455} + \frac{1}{280384}$   $\frac{1}{456} = \frac{1}{457} + \frac{1}{282892}$   $\frac{1}{458} = \frac{1}{459} + \frac{1}{285412}$   $\frac{1}{460} = \frac{1}{461} + \frac{1}{287944}$   $\frac{1}{462} = \frac{1}{463} + \frac{1}{290488}$   $\frac{1}{464} = \frac{1}{465} + \frac{1}{293044}$   $\frac{1}{466} = \frac{1}{467} + \frac{1}{295612}$   $\frac{1}{468} = \frac{1}{469} + \frac{1}{298192}$   $\frac{1}{470} = \frac{1}{471} + \frac{1}{300784}$   $\frac{1}{472} = \frac{1}{473} + \frac{1}{303388}$   $\frac{1}{474} = \frac{1}{475} + \frac{1}{306004}$   $\frac{1}{476} = \frac{1}{477} + \frac{1}{308632}$   $\frac{1}{478} = \frac{1}{479} + \frac{1}{311272}$   $\frac{1}{480} = \frac{1}{481} + \frac{1}{313924}$   $\frac{1}{482} = \frac{1}{483} + \frac{1}{316588}$   $\frac{1}{484} = \frac{1}{485} + \frac{1}{319264}$   $\frac{1}{486} = \frac{1}{487} + \frac{1}{321952}$   $\frac{1}{488} = \frac{1}{489} + \frac{1}{324652}$   $\frac{1}{490} = \frac{1}{491} + \frac{1}{327364}$   $\frac{1}{492} = \frac{1}{493} + \frac{1}{330088}$   $\frac{1}{494} = \frac{1}{495} + \frac{1}{332824}$   $\frac{1}{496} = \frac{1}{497} + \frac{1}{335572}$   $\frac{1}{498} = \frac{1}{499} + \frac{1}{338332}$   $\frac{1}{500} = \frac{1}{501} + \frac{1}{341104}$   $\frac{1}{502} = \frac{1}{503} + \frac{1}{343888}$   $\frac{1}{504} = \frac{1}{505} + \frac{1}{346684}$   $\frac{1}{506} = \frac{1}{507} + \frac{1}{349492}$   $\frac{1}{508} = \frac{1}{509} + \frac{1}{352312}$   $\frac{1}{510} = \frac{1}{511} + \frac{1}{355144}$   $\frac{1}{512} = \frac{1}{513} + \frac{1}{357988}$   $\frac{1}{514} = \frac{1}{515} + \frac{1}{360844}$   $\frac{1}{516} = \frac{1}{517} + \frac{1}{363712}$   $\frac{1}{518} = \frac{1}{519} + \frac{1}{366592}$   $\frac{1}{520} = \frac{1}{521} + \frac{1}{369484}$   $\frac{1}{522} = \frac{1}{523} + \frac{1}{372388}$   $\frac{1}{524} = \frac{1}{525} + \frac{1}{375304}$   $\frac{1}{526} = \frac{1}{527} + \frac{1}{378232}$   $\frac{1}{528} = \frac{1}{529} + \frac{1}{381172}$   $\frac{1}{530} = \frac{1}{531} + \frac{1}{384124}$   $\frac{1}{532} = \frac{1}{533} + \frac{1}{387088}$   $\frac{1}{534} = \frac{1}{535} + \frac{1}{390064}$   $\frac{1}{536} = \frac{1}{537} + \frac{1}{393052}$   $\frac{1}{538} = \frac{1}{539} + \frac{1}{396052}$   $\frac{1}{540} = \frac{1}{541} + \frac{1}{399064}$   $\frac{1}{542} = \frac{1}{543} + \frac{1}{402088}$   $\frac{1}{544} = \frac{1}{545} + \frac{1}{405124}$   $\frac{1}{546} = \frac{1}{547} + \frac{1}{408172}$   $\frac{1}{548} = \frac{1}{549} + \frac{1}{411232}$   $\frac{1}{550} = \frac{1}{551} + \frac{1}{414304}$   $\frac{1}{552} = \frac{1}{553} + \frac{1}{417388}$   $\frac{1}{554} = \frac{1}{555} + \frac{1}{420484}$   $\frac{1}{556} = \frac{1}{557} + \frac{1}{423592}$   $\frac{1}{558} = \frac{1}{559} + \frac{1}{426712}$   $\frac{1}{560} = \frac{1}{561} + \frac{1}{429844}$   $\frac{1}{562} = \frac{1}{563} + \frac{1}{432988}$   $\frac{1}{564} = \frac{1}{565} + \frac{1}{436144}$   $\frac{1}{566} = \frac{1}{567} + \frac{1}{439312}$   $\frac{1}{568} = \frac{1}{569} + \frac{1}{442492}$   $\frac{1}{570} = \frac{1}{571} + \frac{1}{445684}$   $\frac{1}{572} = \frac{1}{573} + \frac{1}{448888}$   $\frac{1}{574} = \frac{1}{575} + \frac{1}{452104}$   $\frac{1}{576} = \frac{1}{577} + \frac{1}{455332}$   $\frac{1}{578} = \frac{1}{579} + \frac{1}{458572}$   $\frac{1}{580} = \frac{1}{581} + \frac{1}{461824}$   $\frac{1}{582} = \frac{1}{583} + \frac{1}{465088}$   $\frac{1}{584} = \frac{1}{585} + \frac{1}{468364}$   $\frac{1}{586} = \frac{1}{587} + \frac{1}{471652}$   $\frac{1}{588} = \frac{1}{589} + \frac{1}{474952}$   $\frac{1}{590} = \frac{1}{591} + \frac{1}{478264}$   $\frac{1}{592} = \frac{1}{593} + \frac{1}{481588}$   $\frac{1}{594} = \frac{1}{595} + \frac{1}{484924}$   $\frac{1}{596} = \frac{1}{597} + \frac{1}{488272}$   $\frac{1}{598} = \frac{1}{599} + \frac{1}{491632}$   $\frac{1}{600} = \frac{1}{601} + \frac{1}{495004}$   $\frac{1}{602} = \frac{1}{603} + \frac{1}{498388}$   $\frac{1}{604} = \frac{1}{605} + \frac{1}{501784}$   $\frac{1}{606} = \frac{1}{607} + \frac{1}{505192}$   $\frac{1}{608} = \frac{1}{609} + \frac{1}{508612}$   $\frac{1}{610} = \frac{1}{611} + \frac{1}{512044}$   $\frac{1}{612} = \frac{1}{613} + \frac{1}{515488}$   $\frac{1}{614} = \frac{1}{615} + \frac{1}{518944}$   $\frac{1}{616} = \frac{1}{617} + \frac{1}{522412}$   $\frac{1}{618} = \frac{1}{619} + \frac{1}{525892}$   $\frac{1}{620} = \frac{1}{621} + \frac{1}{529384}$   $\frac{1}{622} = \frac{1}{623} + \frac{1}{532888}$   $\frac{1}{624} = \frac{1}{625} + \frac{1}{536404}$   $\frac{1}{626} = \frac{1}{627} + \frac{1}{540032}$   $\frac{1}{628} = \frac{1}{629} + \frac{1}{543672}$   $\frac{1}{630} = \frac{1}{631} + \frac{1}{547324}$   $\frac{1}{632} = \frac{1}{633} + \frac{1}{551088}$   $\frac{1}{634} = \frac{1}{635} + \frac{1}{554864}$   $\frac{1}{636} = \frac{1}{637} + \frac{1}{558652}$   $\frac{1}{638} = \frac{1}{639} + \frac{1}{562452}$   $\frac{1}{640} = \frac{1}{641} + \frac{1}{566264}$   $\frac{1}{642} = \frac{1}{643} + \frac{1}{570088}$   $\frac{1}{644} = \frac{1}{645} + \frac{1}{573924}$   $\frac{1}{646} = \frac{1}{647} + \frac{1}{577772}$   $\frac{1}{648} = \frac{1}{649} + \frac{1}{581632}$   $\frac{1}{650} = \frac{1}{651} + \frac{1}{585504}$   $\frac{1}{652} = \frac{1}{653} + \frac{1}{589388}$   $\frac{1}{654} = \frac{1}{655} + \frac{1}{593284}$   $\frac{1}{656} = \frac{1}{657} + \frac{1}{597192}$   $\frac{1}{658} = \frac{1}{659} + \frac{1}{601112}$   $\frac{1}{660} = \frac{1}{661} + \frac{1}{605044}$   $\frac{1}{662} = \frac{1}{663} + \frac{1}{608988}$   $\frac{1}{664} = \frac{1}{665} + \frac{1}{612944}$   $\frac{1}{666} = \frac{1}{667} + \frac{1}{616912}$   $\frac{1}{668} = \frac{1}{669} + \frac{1}{620892}$   $\frac{1}{670} = \frac{1}{671} + \frac{1}{624884}$   $\frac{1}{672} = \frac{1}{673} + \frac{1}{628888}$   $\frac{1}{674} = \frac{1}{675} + \frac{1}{632904}$   $\frac{1}{676} = \frac{1}{677} + \frac{1}{636932}$





تابع السؤال التاسع عشر

①  $0 < \sqrt{9 - 4x + 12x - 9}$

$0 < \sqrt{4(3 - x)}$

$0 < |3 - x|$

$0 < |x - 3|$

$0 < |x - \frac{3}{2}|$

نرسم (الدالة د(س) =  $|x - \frac{3}{2}|$ )

د(س) =  $|x - \frac{3}{2}|$

وتكون مجموعة كل هي المنطقة التي تلو المستقيم  $y = \frac{0}{2}$   
وهي ح - [1.2]

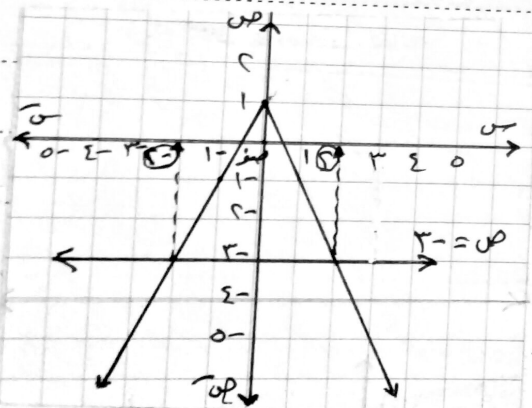
الحل: جدياً

$\frac{0}{2} < 3 - x$  أو  $\frac{0}{2} > x - 3$

$x + \frac{0}{2} < 3$  أو  $x + \frac{0}{2} > 3$

$x < 3$  أو  $x > 3$

∴  $x = 3$  - [1.2]



السؤال العشرون

① د(س) =  $|x - 1| - 1 = 0$   $|x - 1| = 1$

$|x - 1| = 1$

من الرسم: مجموعة حل هي  $\{2, 0\}$

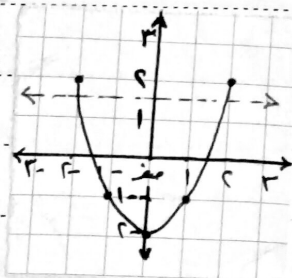
② الدالة دالة زوجية

∴  $(2, 0)$  صورتها بالانعكاس هو

الصادات هي نفسها

$(1, 1) \rightarrow (1, 1)$  صورة

$(2, 2) \rightarrow (2, 2)$  صورة



من الرسم نجد أن الخط الأفقي

يقطع منحني الدالة في نقطتين

∴ الدالة ليست أحادية

②  $\frac{3x^2}{x^2 + 1} = د(س) = \frac{(3x^2 - 1)(x^2 + 1)}{(x^2 + 1)} = \frac{3x^2 - 1}{x^2 + 1}$  ∴ د(س) =  $\frac{3x^2 - 1}{x^2 + 1}$

∴ الدالة زوجية

$$\frac{\gamma}{2}(A) \pm = \gamma + \omega r \therefore$$

$$f_V = r + \omega r$$

۲. - = ۵۷.۵

10-25

$$\{10-215\} = 8.5 \therefore$$

$\therefore \frac{5}{6} - 3 - \frac{5}{6} = 9$

$$1. = \frac{5}{6} \text{ m}$$

مرفوض

35 ± 0.5

$$\{rr - 2rr\} = 2r$$

пер (5)

$$1 = \frac{\cancel{50}}{\cancel{50}} \times \frac{\cancel{70}}{\cancel{70}} \times \frac{\cancel{20}}{\cancel{20}} \times \frac{\cancel{4}}{\cancel{4}} \quad (1)$$

لاحظ أن جزء العارلة

$$r_V = \sqrt{150} \therefore r = \sqrt{50} \therefore (2)$$

$$Z = (r - \dots) \quad (4)$$

⑤:  $\text{لول} + \text{لول} = \text{لول}$  : ل. ٢ هـ جزا العادلة المعطاة : ل. ٢ =  $\frac{12}{3}$  = ٤

$$2 = 2 \text{ لو} = 2 \text{ لو} = 2 \text{ لو} + 1 \text{ لو}$$

$$7 = |0 + jr| \therefore r = 7 + |0 + jr| \quad (v)$$

$$\phi = 2.5 \text{ m}$$

$$\Sigma = \frac{15 \times 15}{15 \times 15} = \frac{9}{15} \times \frac{2}{15} = \frac{9}{5} \times \frac{2}{5} \quad (1)$$

$$\boxed{\Sigma = P} \therefore r = 1 - p \therefore \overset{1-p}{r} = 1 \therefore \overset{1-p}{r} = (u) \geq \therefore \overset{u}{r} = (1+u) \geq \textcircled{9}$$

$$\underline{r = \sigma} : \quad \underline{r = \sigma} : \quad r = \left(\frac{1}{\Sigma}\right) = \sigma : \quad \sigma = r = \sigma \quad (1)$$

$$\underline{\underline{u = 1 + 1 + 1 + 1 = 4}} \quad (15) \quad (32.1) \quad (11)$$

$$\underline{\underline{f_{07}}} = 1 + f_{07} = \infty + 0 \therefore \quad \left. \begin{array}{l} f_{07} = 1 = \frac{1}{1} \cdot 1 = \infty \therefore \\ 1 = \frac{1}{0} \cdot 1 = 0 \therefore \end{array} \right\} \begin{array}{l} 7 \cdot 1 = \frac{0}{1} \cdot 1 = \frac{1}{1} \cdot 1 = 1 \therefore (17) \\ \leftarrow \end{array}$$

السؤال الثالث والعشرون :

$$m = 2, n = 2, \text{ ثلثة } \\ d(1, 2) = {}^m(1, 2) = {}^m(1+1) = {}^m(2) = (n) \\ \text{عندما } n = 0 \Rightarrow d(1, 2) = (0) \Rightarrow 1 \Rightarrow$$

السؤال الرابع والعشرون :

① : نقطة الرأس هي  $(-2, 4)$  : قاعدة الدالة هي  $d(1, 2) = (1+2) = 3$

② الدالة تناقصية من  $[-\infty, 2]$  و تزايدية من  $[2, \infty)$  :  $d(1, 2) = (1+2) = 3$

③ :  $d(1, 2) = (1+2) = 3$  :  $d(1, 2) = (1+2) = 3$

$$d(1, 2) = (1+2) = 3 \Rightarrow d(1, 2) = (1+2) = 3$$

$$d(1, 2) \neq d(1, 2)$$

: الدالة ليست زوجية وليست فردية

السؤال الخامس والعشرون :

① نقطة الرأس  $(2, 2)$  :  $d(1, 2) = (1+2) = 3$

المجال :  $\{x \in \mathbb{R} \mid x \geq 2\}$  المدى :  $\{y \in \mathbb{R} \mid y \geq 2\}$

② الدالة تناقصية على مجالها

$$d(1, 2) = (1+2) = 3 \Rightarrow d(1, 2) = (1+2) = 3$$

$$d(1, 2) = (1+2) = 3 \Rightarrow d(1, 2) = (1+2) = 3$$

$$d(1, 2) \neq d(1, 2)$$

$$d(1, 2) \neq d(1, 2)$$

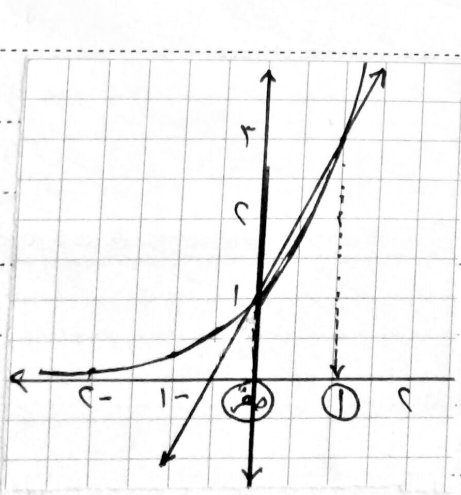
: الدالة ليست فردية وليست زوجية



السؤال السادس والعشرون :  
 ①  $\begin{aligned} & \text{في د(س)} = \sqrt{s} \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \end{aligned}$

②  $\begin{aligned} & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \end{aligned}$

السؤال السابع والعشرون :  
 ①  $\begin{aligned} & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \end{aligned}$



② من الرسم نجد أنه نقطة التقاطع هي (1,1)  
 ③ (1,2) :  $\begin{aligned} & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \\ & \text{في د(س)} = \sqrt{s} + s - 2 \quad \text{في د(س)} = \sqrt{s} + s - 2 \end{aligned}$