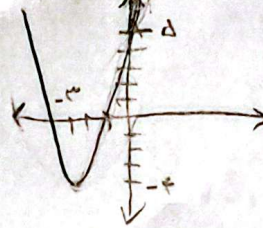


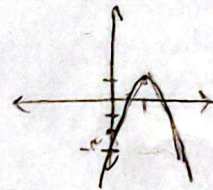
نام و نام خانوادگی آید و پاسخنامه تشریحی تکلیف شماره ۱... کلاس و ۱۴۰۲

الف) $y = x^2 + 4x + 5$ $a > 0 \rightarrow \min$ $\left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{2} = -2 \\ (-2)^2 + 4(-2) + 5 = 4 - 8 + 5 = -4 \end{array} \right.$ $\min = \left| \begin{array}{l} -4 \\ -4 \end{array} \right.$ (منبسط)



ب)

الف) $y = -x^2 + 4x - 3$ $a < 0 \rightarrow \max$ $\left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{-2} = 2 \\ -4 + 16 - 3 = 9 \end{array} \right.$ $\max = \left| \begin{array}{l} 9 \\ 9 \end{array} \right.$



ب) $0 = -x^2 + 4x - 3 \Rightarrow \frac{-1}{\pm 1} = \frac{-(x^2 - 4x + 3)}{\pm 1} \rightarrow 1 = (x-2)^2 \rightarrow 1 = |x-2|$ $\left| \begin{array}{l} x=3 \\ x=1 \end{array} \right.$

$2x^2 - 3x + a = 0$ $\Delta = b^2 - 4ac = 9 - 11a$
 الف) $\Delta > 0 \rightarrow 9 - 11a > 0 \rightarrow -11a > -9 \rightarrow a < \frac{9}{11}$
 ب) $\Delta = 0 \rightarrow a = \frac{9}{11}$
 ج) $\Delta < 0 \rightarrow a > \frac{9}{11}$
 د) $\Delta \geq 0 \rightarrow a \leq \frac{9}{11}$

الف) $x^2 - 2x - 1 = 0 \xrightarrow{+1} x^2 - 2x + 1 = 2 \rightarrow (x-1)^2 = 2 \rightarrow |x-1| = \sqrt{2} \rightarrow \begin{cases} x-1 = \sqrt{2} \rightarrow x = \sqrt{2} + 1 \\ x-1 = -\sqrt{2} \rightarrow x = -\sqrt{2} + 1 \end{cases}$

ب) $x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{4}} x^2 - x + \frac{1}{4} = \frac{5}{4} \rightarrow (x - \frac{1}{2})^2 = \frac{5}{4} \rightarrow |x - \frac{1}{2}| = \frac{\sqrt{5}}{2}$
 $\begin{cases} x - \frac{1}{2} = \frac{\sqrt{5}}{2} \rightarrow x = \frac{\sqrt{5} + 1}{2} \\ x - \frac{1}{2} = -\frac{\sqrt{5}}{2} \rightarrow x = \frac{1 - \sqrt{5}}{2} \end{cases}$

الف) $x^2 - 2x - 1 = 0$ $\Delta = b^2 - 4ac = 4 + 4 = 8$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm 2\sqrt{2}}{2} = 1 \pm \sqrt{2}$

ب) $x^2 + x - 6 = 0$ $\Delta = 1 + 24 = 25$ $x = \frac{-1 \pm \sqrt{25}}{2}$

$$\text{الف) } x^2 - 11x + 28 = 0 \rightarrow (x-4)(x-7) = 0 \rightarrow x=7, x=4$$

$$\text{ب) } x^2 + 3x - 28 = 0 \rightarrow (x-4)(x+7) = 0 \rightarrow x=-7, x=4$$

2

$$\text{الف) } x^2 - 12x + 27 = 0 \rightarrow x^2 - 12x + 27 = 0 \rightarrow (x-3)(x-9) = 0 \begin{cases} x = \frac{27}{9} \\ x = \frac{27}{3} = 9 \end{cases}$$

$$\text{ب) } x^2 - 10x + 21 = 0 \rightarrow x^2 - 10x + 21 = 0 \rightarrow (x-3)(x-7) = 0 \begin{cases} x = \frac{21}{7} \\ x = \frac{21}{3} = 7 \end{cases}$$

3

$$\text{الف) } 2x^2 - 5x + 2 = 0 \rightarrow x^2 - 2.5x + 1 = 0 \rightarrow (x-2)(x-0.5) = 0 \begin{cases} x = \frac{2}{2} \\ x = \frac{1}{2} = 0.5 \end{cases}$$

$$\text{ب) } 2x^2 + 5x + 2 = 0 \rightarrow x^2 + 2.5x + 1 = 0 \rightarrow (x+2)(x+0.5) = 0 \begin{cases} x = -\frac{2}{2} \\ x = -\frac{1}{2} = -0.5 \end{cases}$$

$$\text{ج) } 2x^2 - 5x + 1 = 0 \quad \Delta = 25 - 4 = 21 \rightarrow x = \frac{5 \pm \sqrt{21}}{4}$$

$$\text{د) } 4x^2 + 7x + 9 = 0 \quad \Delta = 49 - 144 = -95 \rightarrow \Delta < 0 \rightarrow \text{لا يوجد حلا حقيقي}$$

4

$$x^2 - 3x - 2 = 0$$

$$S = \text{مجموع} = \frac{-b}{a} = \frac{3}{1} = 3$$

$$P = \text{ضرب} = \frac{c}{a} = \frac{-2}{1} = -2$$

$$\text{الف) } S^2 - 4P = 9 + 8 = 17$$

$$\text{ب) } S^2 - 3SP = 17 + 12 = 29$$

5

$$\text{الف) } \binom{5}{2} + \binom{9}{2} = \frac{5 \times 4}{2 \times 1} + \frac{9 \times 8}{2 \times 1} = 10 + 36 = 46$$

$$\text{ب) } \binom{9}{3} - \binom{1}{2} = \frac{9 \times 8 \times 7}{3 \times 2 \times 1} - \frac{1 \times 1}{2 \times 1} = 84 - 0.5 = 83.5$$

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