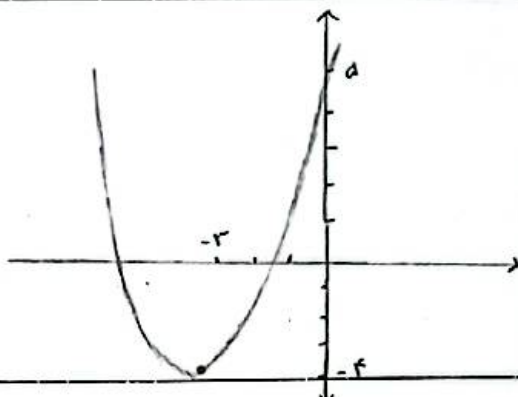


Min
a)

$$x_{(s)} = \frac{-b}{2a} = \frac{-4}{2} = -2$$

$$y_{(s)} = \frac{-\Delta}{4a} = \frac{-b^2 + 4ac}{4a} = \frac{-16 + 12}{4} = -1$$

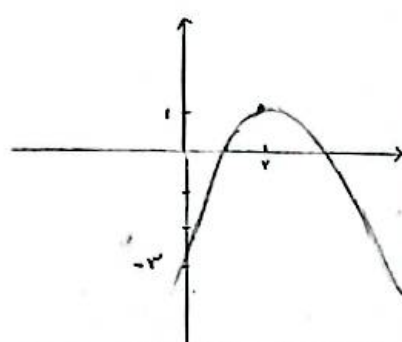


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Max
a)

$$x_{(s)} = \frac{-b}{2a} = \frac{-4}{-2} = 2$$

$$y_{(s)} = \frac{-\Delta}{4a} = \frac{-b^2 + 4ac}{4a} = \frac{-16 + 12}{-4} = 1$$



2

الف) $\Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 16 - 4a > 0 \rightarrow 4 > a \rightarrow \frac{4}{a} > 1$

ب) $\Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow 16 - 4a = 0 \rightarrow 4 = a \rightarrow a = \frac{4}{1}$

ج) $\Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow 16 - 4a < 0 \rightarrow 4 < a \rightarrow \frac{4}{a} < 1$

د) $\Delta \gg 0 \rightarrow b^2 - 4ac \gg 0 \rightarrow 16 - 4a \gg 0 \rightarrow 4 \gg a \rightarrow \frac{4}{a} \gg 1$

3

الف
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$$x^2 - 2x - 1 = 0$$

$$x^2 - 2x - 1 + 2 = 2$$

$$(x-1)^2 = 2$$

$$x-1 = \pm\sqrt{2}$$

$$x = 1 \pm \sqrt{2}$$

ب
↓

$$x^2 - x - 1 = 0$$

$$x^2 - x + \frac{1}{4} - 1 = \frac{1}{4}$$

$$x^2 - x + \frac{1}{4} = \frac{5}{4}$$

$$(x - \frac{1}{2})^2 = \frac{5}{4} \rightarrow x = \frac{1 \pm \sqrt{5}}{2}$$

4

$$\Delta = b^2 - 4ac = 4 + 4 = 8$$

الف) $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$

$$\Delta = b^2 - 4ac = 1 + 14 = 15$$

ب)

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{15}}{2}$$

5

$$x^2 - 11x + 28 = 0$$

$$(x-4)(x-7) = 0$$

$$x=4 \quad x=7$$

$$x^2 + 3x - 28 = 0$$

$$(x-4)(x+7) = 0$$

$$x=4 \quad x=-7$$

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الف

$$dx^2 - 12x + 7 = 0$$

$$x^2 - 12x + 36 = 0$$

$$(x-6)(x-6) = 0$$

$$x = +\frac{6}{1} \quad x = 1$$

ب

$$3x^2 - 10x + 7 = 0$$

$$x^2 - 10x + 21 = 0$$

$$(x-3)(x-7) = 0$$

$$x = \frac{3}{3} = 1 \quad x = \frac{7}{3}$$

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$$\text{الف) } x=1$$

$$x = \frac{c}{a} = \frac{3}{3}$$

$$\text{ب) } x=-1$$

$$x = \frac{-c}{a} = -\frac{3}{3}$$

$$\Delta = b^2 - 4ac = 49 - 144 < 0$$

فاً، ليس له حلين حقيقيين

$$\text{ج) } \Delta = b^2 - 4ac = 25 - 16 = 9$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{5 \pm 3}{2}$$

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$$S = -\frac{b}{a} = 3$$

$$\text{الف) } 9 + 4 = 13$$

$$P = \frac{c}{a} = -2$$

$$\text{ب) } 27 - 3 \times 3 \times 2 = 27 + 18 = 45$$

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

$$\text{ب) } \binom{9}{2} - \binom{4}{2} = \frac{9 \times 8}{2} - \frac{4 \times 3}{2} = 36 - 6 = 30$$

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