عارفه میثمی - دهم تجربی

$s \mid -\frac{b}{2a}$ ...

1)

الف) $y = 2x^2 - 4x + 1$ — $a>0$, min

$-\frac{b}{2a} = \frac{4}{4} = 1 = x_{min}$

$2\times1 - 4\times1 + 1 = -1 = y_{min}$

ب) $y = -2x^2 + 3x + 5$ — $a<0$, max

$-\frac{b}{2a} = \frac{-3}{-4} = \frac{3}{4} = x_{max}$

$-2\times\frac{9}{16} + \frac{9}{4} + 5 = \frac{-9+18}{8} + 5 = \frac{49}{8} = 6{,}125 = y_{max}$

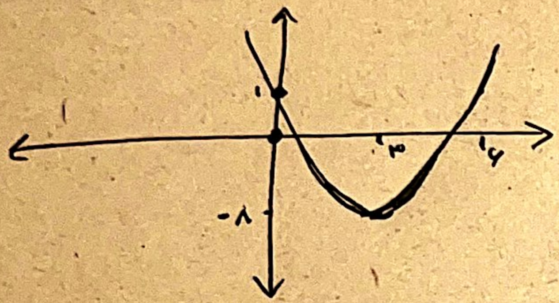
2)

الف) $y = x^2 - 6x + 1$ — $a>0$, min

$s \mid -\frac{b}{2a} = \frac{6}{2} = 3 = x_{min}$

$9 - 18 + 1 = -8 = y_{min}$

x	0	3	6
y	1	-8	1

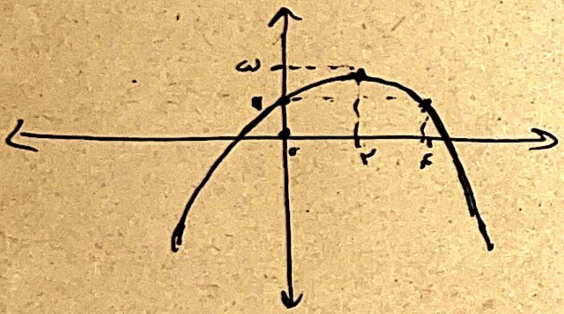


ب) $y = -x^2 + 4x + 1$ — $a<0$, max

$s \mid -\frac{b}{2a} = \frac{-4}{-2} = 2 = x_{max}$

$-4 + 8 + 1 = 5 = y_{max}$

x	0	2	4
y	+1	5	+1



3) معادله درجه سه است که می‌شود ضرب یک درجه دو در یک

$(\_\_\_)(x^2 + bx + c) \leftarrow$

$x^2 \oplus (1)x + (-2) = 0$ ✓

$(x-2)(x+1) = 0 \rightarrow x = 2, -1 \rightarrow S = 1, P = -2$ ✓

$y = 4x^3 + kx^2 - 9x - 2 = 0 \xrightarrow{x=-1,\ y=0} 4\times(-1)^3 + k(-1)^2 - 9(-1) - 2 = 0 \rightarrow +k + 3 = 0$ $\boxed{k = -3}$

$y = 4x^3 + kx^2 - 9x - 2 = 0 \xrightarrow{x=2,\ y=0} 4(2)^3 + k(2)^2 - 9(2) - 2 = 0 \rightarrow 4k = -12$ $\boxed{k = -3}$

$x^2 - 3mx + m = 0$

4)

$\frac{\sqrt{\Delta}}{a} = \frac{\sqrt{9m^2 - 4m}}{1} = 1 \quad 9m^2 - 4m - 1 = 0$

$\Delta = b^2 - 4ac$

$16 + 36 = 52$

$m_1 = \frac{-(-4) + \sqrt{52}}{2 \times 9} = \frac{4 + 2\sqrt{13}}{18} = \frac{2(2 + \sqrt{13})}{9}$

$m_2 = \frac{-(-4) - 2\sqrt{13}}{2 \times 9}$

$\frac{4 - 2\sqrt{13}}{18} \rightarrow \frac{2(2 - \sqrt{13})}{18\,9}$

$y = 2x^2 - mx - m = 0$

$\frac{c}{a} = \frac{\frac{-2 \pm \sqrt{13}}{9}}{\frac{2}{1}} =$

$m = \frac{2 \pm \sqrt{13}}{9}$

$\frac{-2 \pm \sqrt{13}}{18}$ → حاصل ضرب ریشه‌ها

5) ?

6)

$y = ax^2 + 3x + a$

$S \left| -\frac{b}{2a} = \frac{-3}{2a} = x_{min} \right.$

$y_{min} = \frac{7}{8}$

① $a > 0 \rightarrow min$ — تعیین مقدار

$f(x) = a \frac{9}{4a^2} - \frac{9}{2a} + a = \frac{7}{8}$

$\frac{9 - 18}{4a} + \frac{4a^2}{4a} = \frac{7}{8}$

$-72 + 32a^2 = 28a \rightarrow 32a^2 - 28a - 72 = 0$

$4(8a^2 - 7a - 18) = 0 \rightarrow 8a^2 - 7a - 18 = 0$

$\Delta = b^2 - 4ac$

$625 = 49 - 4(8)(-18)$

$x_1 = \frac{-(-7) + \sqrt{625}}{16} = \frac{7 + 25}{16} = 2$ — شرط ① تو نمی‌خوره

$x_2 = \frac{-(-7) - \sqrt{625}}{16} = \frac{7 - 25}{16} = -\frac{9}{8}$ ✓

8)

$y = 12x^2 - 12x + 2$

$y = -ax^2 + ax + 2 \quad S \left| -\frac{b}{2a} = \frac{-a}{-2a} = +\frac{1}{2} = x_{max} \right.$

$\rightarrow \cancel{2bx+} \frac{b}{4} - \frac{b}{2} - 1 = \frac{-a}{4} + \frac{2a}{4} + 2 \rightarrow -1 = \frac{a}{4} + 2 \rightarrow \frac{a}{4} = -3 \rightarrow a = -12$

$y = 2bx^2 - bx - 1 \quad S \left| \frac{-b}{4b} = \frac{b}{4a} = \frac{1}{4} = x_{min} \right.$

$b - a = 6 - (-12) = 18$

$2b \times \frac{1}{16} - \frac{b}{4} - 1 = \frac{b}{8} - \frac{b}{4} - 1 = 12 \times \frac{1}{2} - 1 \rightarrow \frac{-b}{8} = \frac{6}{8} \rightarrow b = 6$

۹) $y = ۲۵ax^۲ + ۴x + \beta$

$\beta > a \quad , \quad a \neq 0 \quad a > 0$

$s \mid -\frac{۲}{۲۵a} \rightarrow x < 0$

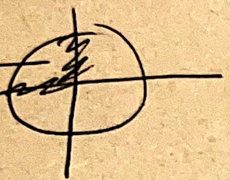
$-\frac{۴}{۲۵a} + \beta \rightarrow \beta > a$

[illegible]

$s \mid -\frac{b}{۲a} = \frac{-۴}{۵۰a} = \frac{-۲}{۲۵a}$

$y = ~~۲۵a~~ \times \frac{۴}{~~a^۲~~} + ۴ \times \frac{-۲}{۲۵a} + \beta \Rightarrow \frac{۴}{۲۵a} - \frac{۸}{۲۵a} + \beta$

$y > 0 , x < 0 \leftarrow$



[illegible]

۱۰) $(a^۲ + b^۲ - ۱۲)$

$۲ab \rightarrow a \times b = ۴$

$a \times b = ۴ = \frac{c}{a} \leftarrow$

$\frac{c}{a} = \frac{a+b-1}{1} = a+b = ۴$

$a + b = ۷$

$\frac{۱}{a} x^۲ - \underbrace{(a^۲ + b^۲ - ۱۲)}_{b} x + \underbrace{a+b-1}_{c} = 0$

۷) ؟