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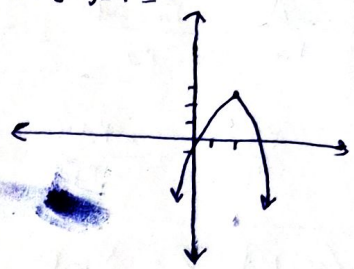
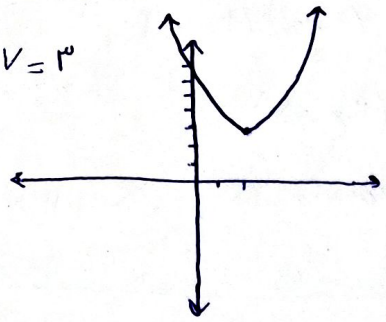
ب: $x = \frac{-b}{2a} = \frac{-4}{-2} = 2$

$y = -2^2 + 4(2) - 1 = 3$



$x = \frac{-b}{2a} = \frac{4}{2} = 2$

$y = 2^2 - 4(2) + 7 = 3$



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الف: $b^2 - 4ac > 0$ $m^2 + 1 + 2m - 4m - 16 > 0$ $m^2 - 2m - 15 > 0$ $(m-5)(m+3) > 0$

$m = \mathbb{R} - [-3, 5]$

ب: $b^2 - 4ac = 0$ $m^2 - 2m - 15 = 0$ $(m-5)(m+3) = 0$

$m = -3$ $m = 5$

ج: $b^2 - 4ac < 0$ $m = (-3, 5)$

د: $b^2 - 4ac \geq 0$

۳

الف: $\Delta > 0$ $S < 0$ $P > 0$ $\frac{2m+2}{m-2} < 0$ $\frac{10}{m-2} > 0$

بازای هر مقدار هست

بازای هیچ مقدار

اشتراک ندارند

ب: $\Delta > 0$ $S < 0$ $P < 0$

$(-5, 2) \cap (-1, 2) = (-1, 2)$

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الف: $\Delta > 0$ $a < 0$ $P < 0$

$m - 2 < 0$

$m < 2$

$\frac{10}{m-2} < 0$

اشتراک $m < 2$

ب: $\frac{-b}{2a} = -2$ $\frac{2m+2}{2m-4} = -2$ $2m + 2 = -4m + 8$ $6m = 6$ $\boxed{m = 1}$

۵

$6\left(\frac{2x^2}{3} - (2\sin\alpha)x + \frac{3}{2}\right) = 0$

$4x^2 - (12\sin\alpha)x + 9 = 0$

if $\sin\alpha = 1$ $4x^2 - 12x + 9 = 0$

$(2x - 3)^2 = 0$ $x = \frac{3}{2}$

$3x^2 - 2x - 1 = (3x+1)(x-1)$

$2x^2 - 3x - 5 = (2x-5)(x+1)$

$\frac{(3x+1)(x-1)(x+1)(2x-5)}{(1-x)(1+x)}$

$-(3x+1)(2x-5)$

$-6x^2 + 15x - 2x + 5 = -6x^2 + 13x + 5$

$\frac{-\Delta}{4a} = \frac{4ac - b^2}{4a} = \frac{-120 - 169}{-24} =$

$\frac{289}{24} = \frac{-289}{-24}$

۶

$3(\alpha+\beta) - 7 = 5\alpha\beta$

$3\left(\frac{m+2}{m}\right) - 7 = 5\left(\frac{-2}{m}\right)$

$\frac{3m+6-7m}{m} = \frac{-10}{m}$

$(\alpha+\beta)^2 - 2\alpha\beta = \alpha^2 + \beta^2$

$\left(\frac{3}{2}\right)^2 - 2\left(\frac{-1}{2}\right) = \frac{9}{4} + 1 = \boxed{\frac{13}{4}}$

$\frac{-4m+6}{m} = \frac{-10}{m}$

$16 = 4m$

$m = 4$

$4x^2 - 6x - 2 = 0$

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$a+\beta = 5$

$a\beta = 2$

$\beta^2 = 5\beta - 2$

$\frac{8+\beta^6}{5\beta^{12}} = \frac{8}{5\beta^{12}} + \frac{\beta^6}{5\beta^{12}} = \frac{8}{5\beta^{12}} + \frac{\beta^{12}}{5}$

$\frac{1}{\beta} = \frac{a}{2} \quad \frac{1}{\beta^{12}} = \frac{a^{12}}{8}$

$\beta^3 = \beta \times \beta^2 = 5(5\beta - 2) - 2\beta$

$\beta^3 = 23\beta - 10$

$\frac{23(\alpha+\beta) - 20}{5} = \frac{23 \times 5 - 20}{5} = \frac{95}{5}$

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$\frac{8}{5}\left(\frac{a^{12}}{8}\right) + \frac{1}{5}(23\beta - 10) = \frac{a^{12}}{5} + \frac{23\beta - 10}{5} = \frac{a^{12} + 23\beta - 10}{5}$

$a^{12} = 23\alpha - 10$

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$ax^2 + bx + c = y$

$x=0 \quad y=2$

$c=2$

$x=-2 \quad 9a - 3b + 2 = 2$

$9a = 3b$

$3a = b$

$ax^2 + bx + c = y$

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

$\frac{-b}{2a} = \frac{-3}{2}$

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

$x=2 \rightarrow 4a + 6a + 2 = 12 \quad 10a = 10$

$a = 1$

۹

$2x^2 + (m+1)x + m + 6 = x$

$2x^2 + mx + m + 6 = 0$

$\Delta = 0 \quad b^2 - 4ac = 0$

$m^2 - 8m - 48 = 0$

$(m-12)(m+4) = 0$

$m = 12 \quad m = -4$

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