نام و نام خانوادگی: باران [illegible] پاسخنامه تشریحی تکلیف شماره ۱ کلاس پنجشنبه 19:00

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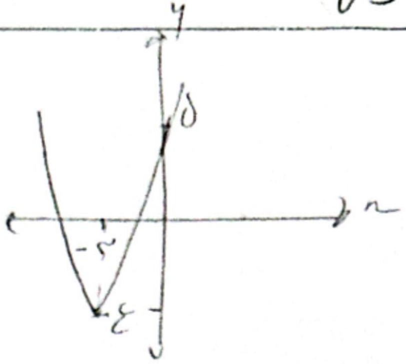
$y = x^2 + 6x + 5$

min: $\dfrac{-b}{2a} = \dfrac{-6}{2} = -3$ ، $\dfrac{-\Delta}{4a} = \dfrac{-16}{4} = -4$

$-\Delta = -(36 - 4 \times 5 \times 1)$



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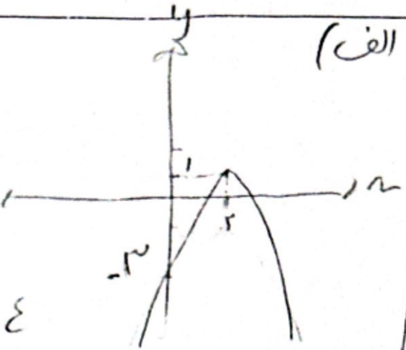
الف) $y = -x^2 + 4x - 3$

Max: $\dfrac{-b}{2a} = \dfrac{-4}{-2} = +2$ ، $\dfrac{-\Delta}{4a} = \dfrac{-4}{-4} = +1$

$-\Delta = -(16 - 4 \times -3 \times -1) = -4$



ب) $y = -x^2 + 4x - 3$

$\dfrac{-b \pm \sqrt{\Delta}}{2a}$

$\Delta = 16 - 4 \cdot -3 \times -1 = 4$

$\dfrac{-4+2}{-2} = \dfrac{-2}{-2} = +1$

$\dfrac{-4-2}{-2} = \dfrac{-6}{-2} = +3$

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الف) $\Delta > 0$ ، $\Delta = b^2 - 4ac$

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

$\Delta = 9 - 4 \times 2 \times a$

$\Delta = 9 \times (-4 \times 2 \times 1) = 1$

ریشه‌ها $= +1$ و $+2$

$a = 1$

ب) $\Delta = 0$

$\Delta = 9 - (4 \times 2 \times a) = 0$

$8a = 9$ ، $a = \dfrac{9}{8}$

ریشه $= 0$

$a = \dfrac{9}{8}$

ج) $\Delta < 0$

$\Delta = 9 - 4 \times 2 \times a < 0$

$9 - 4 \times 2 \times 3 = -15$

ریشه حقیقی ندارد

$a = 3$

د) $\Delta \geq 0$

از (الف) و (ب) می‌توان استفاده کرد اما:

$\Delta = 9 \times -4 \times 2 \times -2 =$

$9 + 16 = 27$

$a = -2$

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الف) $x^2 - 2x - 1 = 0$

$x^2 - 2x + 1 = +2$ ، $\sqrt{(x-1)^2} = 2$

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

$x = 1 + \sqrt{2}$ ، $x = 1 - \sqrt{2}$

ب) $x^2 - x - 1 = 0$

$x^2 - x + \dfrac{1}{4} = \dfrac{5}{4}$ ، $\sqrt{(x - \frac{1}{2})^2} = \dfrac{5}{4}$

$x - \dfrac{1}{2} = \pm\sqrt{\dfrac{5}{4}}$

$x = +\sqrt{\dfrac{5}{4}} + \dfrac{1}{2}$ ، $x = -\sqrt{\dfrac{5}{4}} + \dfrac{1}{2}$

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الف) $x^2 - 11x + 28 = 0$

$\dfrac{-b \pm \sqrt{\Delta}}{2a}$ ، $\Delta = b^2 - 4ac$

$\dfrac{-11 + 3}{2} = \dfrac{-8}{2} = -4$

$\dfrac{-11 - 3}{2} = \dfrac{-14}{2} = -7$

ب) $x^2 + 3x - 28 = 0$

$\Delta = 9 - 4 \times -28 \times 1 = 9 + 112 = 121$

$\dfrac{-3 + 11}{2} = \dfrac{+8}{2} = 4$

$\dfrac{-3 - 11}{2} = \dfrac{-14}{2} = -7$

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الف) $x^2 - 11x + 28 = 0$

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

$x = +7 ,\ +4$

ب) $x^2 + 3x - 28 = 0$

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

$x = -7 ,\ +4$

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الف) $5x^2 - 12x + 7 = 0$

$x^2 - 12x + 35 = 0$

$(x - 7)(x - 5) = 0$

$x = \frac{+7}{5} ,\ \frac{+5}{5} = +1$

ب) $3x^2 - 10x + 7 = 0$

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

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

$x = \frac{+7}{3} ,\ +\frac{3}{3} = +1$

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الف) روش

$2x^2 - 5x + 3 = 0$

$x^2 - 5x + 6 = 0$

$(x - 3)(x - 2) = 0$

$x = +\frac{3}{2} ,\ +\frac{2}{2} = +1$

ب) روش

$2x^2 + 5x + 3 = 0$

$x^2 + 5x + 6 = 0$

$(x + 3)(x + 2) = 0$

$x = \frac{-3}{2} ,\ -\frac{2}{2} = -1$

ج) دلتا

$2x^2 - 5x + 1 = 0$

$\frac{+5 \pm \sqrt{25 - 4\times 2\times 1}}{4} = \frac{5 + \sqrt{17}}{4} ,\ \frac{5 - \sqrt{17}}{4}$

د) دلتا

$4x^2 + 7x + 9 = 0$

$\Delta = 49 - 4\times 9\times 4 = 49 - 144 = -95$

فاقد ریشه $\Delta < 0$ حقیقی

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الف) $x^2 - 3x - 2 = 0$

$S = \frac{-b}{a} \quad P = \frac{c}{a}$

$S = \frac{+3}{1} = 3 \quad P = \frac{-2}{1} = -2$

$S^2 - 2P = (3)^2 - (2\times -2) = 9 + 4 = 13$

ب) $S = +3 \quad P = -2$

$S^3 - 3SP = (3)^3 - 3\times 3\times -2 = 27 + 18 = 45$

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الف) $\binom{7}{5} + \binom{9}{2} = \left(\frac{7\times 6\times 5\times 4\times 3}{5\times 4\times 3\times 2\times 1}\right) + \left(\frac{9\times 8}{2\times 1}\right)$

$21 + 36 = 57$

ب) $\binom{9}{3} - \binom{8}{2} = \left(\frac{9\times 8\times 7}{3\times 2\times 1}\right) - \left(\frac{8\times 7}{2\times 1}\right)$

$84 - 28 = 56$