

$$x^2 - x - r = 0$$

$$s = 1 \text{ and } p = -r$$

$$\alpha + \beta = (x_1 + x_2)^2 - 2x_1x_2 = (x_1 + x_2) + \frac{x_1 + x_2}{x_1x_2} =$$

$$1 + 1 + \left(\frac{1}{-r}\right) = 2 - \frac{1}{r} = \frac{2r-1}{r}$$

$$\alpha\beta = (x_1x_2)^2 + (x_1 + x_2)^2 - 2x_1x_2 + \frac{1}{x_1x_2} =$$

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

$$x^2 - \frac{2r-1}{r}x - \frac{-4r^2 + 2r + 1}{r} = 0 \Rightarrow rx^2 - (2r-1)x - (-4r^2 + 2r + 1) = 0$$

$$\left(\sqrt{\frac{r}{x}} + \frac{1}{\sqrt{\frac{r}{x}}} + 1\right)\left(\sqrt{\frac{r}{x}} - 1\right) = r\sqrt{\frac{r}{x}} \quad - 3$$

$$\Rightarrow \sqrt{\frac{r}{x}} + 1 + \sqrt{\frac{r}{x}} - \sqrt{\frac{r}{x}} - \frac{1}{\sqrt{\frac{r}{x}}} = r\sqrt{\frac{r}{x}}$$

$$\sqrt{\frac{r}{x}} - \frac{1}{\sqrt{\frac{r}{x}}} = r\sqrt{\frac{r}{x}} \Rightarrow x^2 - 1 = rx \Rightarrow x^2 - rx - 1 = 0$$

$$x_1 + x_2 = \frac{-b}{a} = r$$

$$rx^2 - rx - 1 = 0$$

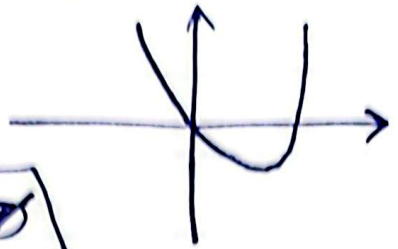
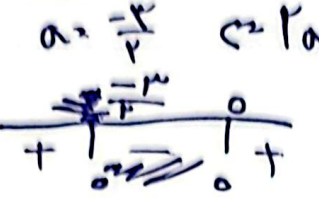
$$\alpha = r\beta \quad \alpha\beta = \frac{c}{a} = \frac{-1}{r} \Rightarrow r\beta^2 = \frac{-1}{r} \Rightarrow \beta^2 = \frac{-1}{r^2} \Rightarrow \beta = \pm \frac{1}{r} \quad - 4$$

$$\beta = \frac{1}{r} \Rightarrow \alpha = r \Rightarrow \alpha + \beta = \frac{1}{r} \quad s = \frac{-b}{a} = \frac{a}{r}$$

$$\beta = -\frac{1}{r} \Rightarrow \alpha = -r \Rightarrow \alpha + \beta = -\frac{1}{r} \quad \alpha + \beta = \frac{a}{r} \Rightarrow a = r(\alpha + \beta) = \pm 1$$

Subo

$$|a_1 - a_2| = 14$$

$y = ax^2 + (3+2a)x$
 سهمی رو به بالا $a > 0$
 یک‌نزد ریشه‌ها منفی $p = 0$ $\Rightarrow$ $s = -\frac{b}{a} > 0$ ✓
 $-\frac{(3+2a)}{a} > 0$
 $\frac{3+2a}{a} < 0$
 $a > 0 \cap -\frac{3}{2} < a < 0 = \emptyset$
 $a = -\frac{3}{2}$ $\Rightarrow$ $2a = -3$ $\Rightarrow$ $3+2a = 0$
 $a = 0$ غیر قابل



$\Rightarrow$ محتمل نکند $\Rightarrow -\frac{b}{a} \Rightarrow \frac{3}{-1} = \frac{-a}{1} \Rightarrow a = 3$ ✓

سهمی اول $y = x^2 + 2x - 2 = 1 \Rightarrow x^2 + 2x - 3$ $\begin{cases} a+b+c=0 \\ \frac{c}{a} = -3 \end{cases}$

سهمی دوم $y = -(x-1)(x+3) + 1 = -x^2 - 2x + 4 \Rightarrow b = 2$

$ab = 2 \times 2 = 4$

9- ریشه‌ها هر کدام غیر اولد می‌شوند پس جمع آنها اولد می‌شوند.

$\alpha + \beta = \alpha' + \beta' + 1 \Rightarrow \frac{a}{2} = \frac{-a}{2a} + 1 = \frac{1}{2} \Rightarrow a = 1$

$2x^2 + x - 4 = 0 \Rightarrow \alpha' \text{ و } \beta' \Rightarrow a = -\frac{2}{2} \text{ و } \beta = 2$

$\left[\frac{a}{\beta} \right] = \left[\frac{-2}{2} \right] = -1$ $\frac{b}{a} = \alpha\beta = -3 \Rightarrow b = -4$

Scanned with

$$x^2 + 4x + m = 0 \quad \left\{ \begin{array}{l} \alpha \\ \beta \end{array} \right. \rightarrow S = \alpha + \beta = -4$$

$$x^2 + 4x - 12m = 0 \quad \left\{ \begin{array}{l} \alpha \\ \beta' \end{array} \right. \rightarrow S = \alpha + \beta' = -4$$

$$\beta' - \beta = \boxed{+8}$$