

1)

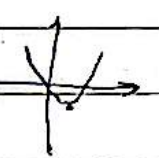
$y = 2x^2 - 2x + 1$  →  $\Delta = b^2 - 4ac = 4 > 0$

$a > 0$        $c = 0$

$x_{\text{راس}} = \frac{-b}{2a} = \frac{1}{2}$

$y_{\text{راس}} = \frac{-b^2 + 4ac}{4a} = \frac{-4}{4} = -1$  نمودار تقریبی

از ناحیه ۱ نمی گذرد



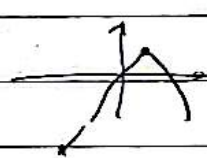
$y = -x^2 + 4x$  →  $\Delta = b^2 - 4ac = 16 > 0$

$a < 0$        $c = 0$

$x_{\text{راس}} = \frac{-b}{2a} = \frac{-4}{-2} = 2$

$y_{\text{راس}} = \frac{-b^2 + 4ac}{4a} = \frac{-16}{-4} = 4$  نمودار تقریبی

از ناحیه ۲ نمی گذرد



۲)

$y = 2x^2 - 4x + 2$  →  $\Delta = b^2 - 4ac = 0 > 0$

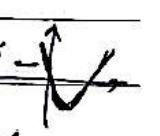
$a > 0$        $c = 2$

$x_{\text{راس}} = \frac{-b}{2a} = \frac{2}{2} = 1$

سور پرچود با محور

$y_{\text{راس}} = \frac{-b^2 + 4ac}{4a} = \frac{-4 + 4}{4} = 0$  نمودار تقریبی

از ناحیه ۱ نمی گذرد پس از ناحیه ۱ و ۲ نمی گذرد



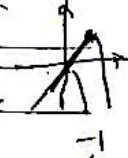
$y = -x^2 + 4x - 1$  →  $\Delta = b^2 - 4ac = 16 - 4 = 12 > 0$

$a < 0$        $c = 1$

$x_{\text{راس}} = \frac{-b}{2a} = \frac{-4}{-2} = 2$

از ناحیه ۱ و ۲ نمی گذرد

$y_{\text{راس}} = \frac{-b^2 + 4ac}{4a} = \frac{-16 + 4}{-4} = 3$  نمودار تقریبی



$$\begin{aligned}
 \text{f) } x^r x^r = 0 &\rightarrow \Delta = a + B = -\frac{b}{a} = 1 \quad p = \alpha B = \frac{c}{a} = -r \\
 (\alpha + B)^r &= 1 = \alpha^r + B^r + r\alpha B = \alpha^r + B^r - r = 1 \\
 &\rightarrow \alpha^r + B^r = r \\
 (\alpha - B)^r &= \alpha^r + B^r - r\alpha B = 1 - r \quad a - B = \sqrt{1-r}
 \end{aligned}$$

$$\text{g) } \frac{\alpha + B}{\alpha - B} = \frac{1}{\sqrt{1-r}} \times \frac{\sqrt{1-r}}{\sqrt{1-r}} = \frac{\sqrt{1-r}}{1-r}$$

$$\rightarrow \alpha^r + B^r = r$$

$$\text{h) } \alpha^r + B^r = (\alpha + B)(\alpha^r - \alpha B + B^r) = 1(1-r) = 1-r$$

$$\text{i) } \alpha^r - B^r = (\alpha - B)(\alpha^r + \alpha B + B^r) = \sqrt{1-r}(1) = \sqrt{1-r}$$

$$\text{e) } y = (x - r)(x^r - ax + a)$$

حالت اول  $\rightarrow x^r - ax + a \quad \Delta < 0 \quad a^r - \varepsilon a < 0$

$$a(a - \varepsilon) < 0$$

$$\frac{a}{+} \frac{\varepsilon}{-} \quad a < a < \varepsilon \quad \text{ⓐ}$$

حالت دوم  $\rightarrow x^r - ax + a \quad \Delta = 0 \quad (x - r)^r = x^r - \varepsilon x + a\varepsilon = x^r - ax + a$

$$\Rightarrow a = \varepsilon \quad \text{ⓑ}$$

$$\text{ⓐ} \vee \text{ⓑ} = a < a < \varepsilon$$

~~Handwritten scribbles and crossed-out equations, including:~~

$$\begin{aligned}
 &\alpha^r + B^r = r \\
 &\alpha^r + B^r = 1 - r \\
 &\alpha^r + B^r = r \\
 &\alpha^r + B^r = r
 \end{aligned}$$

$$a) \mu x^r - 12x - a = 0$$

$$a^r + B^r + a^r - \xi a = v$$

$$a^r + B^r = S^r - rD$$

$$S = \frac{r}{\mu} = \xi \quad D = \frac{c}{a} = \frac{-a}{r}$$

$$a^r + B^r = 14 + \frac{ra}{r}$$

$$\mu a^r - 12a = a$$

$$\mu (a^r - \xi a) = a$$

$$a^r - \xi a = \frac{a}{\mu} \rightarrow a^r + B^r + a^r - \xi a = v$$

$$14 + \frac{ra}{r} - \frac{a}{r} = v \rightarrow \boxed{a = -9}$$

$$\mu x^r - 12x + a = 0$$

$$\delta) \mu x^r - 12x + cu = 0$$

$$(x - \mu)(x - a) = 0$$

$$x_1 = 1 \quad x_2 = \mu \rightarrow \frac{a}{\mu} = -\frac{a}{\mu} \rightarrow \boxed{a = r}$$

7)

$$A \mid r a + \mu a - \mu$$

$$B \mid v - r a, a - r$$

$\Rightarrow$   $x$  مائیں  $y$  کے برابر  $v - r a + r a + r$

$$= b \rightarrow \boxed{b = a} \rightarrow b - r = r$$

$$v - r a \in \mathbb{N} \rightarrow r a \leq v$$

$$a \leq r \text{ (1)}$$

$$a - r \in \mathbb{N} \rightarrow a \geq r \text{ (2)}$$

$$\text{(1) } \cap \text{ (2)} \rightarrow a = r$$

$$B \mid (1, 1)$$

$$A \mid (a, 1)$$

$$y = h(x - \mu) + r = \frac{y}{\mu}$$

$$= h x^r - 12 h x + r a h + r$$

$$(1, 1) \rightarrow 1 = h - 12 h + r a h + r$$

$$14 h = r \rightarrow h = \frac{-1}{r}$$

$$C = r a h + r = r - \frac{r a}{r} = -r + \frac{a}{r}$$

$$\text{یہ } r \text{ کو } 6 = \boxed{r \mid r a}$$

$$v) \quad ax^r - ay - b = 0$$

$$s = 1$$

$$p = -\frac{b}{a}$$

$$r_0 B^r + r_0 a^r - r_0 B = 1v$$

$$r_0 (a^r + B^r) + r_0 (B^r - B) = 1v$$

$$a B^r - a B = b$$

$$a (B^r - B) = b \rightarrow B^r - B = \frac{b}{a}$$

$$a^r + B^r = s^r - r p = 1 + \frac{r b}{a}$$

$$r \cdot (1 + \frac{r b}{a}) + r \cdot (\frac{b}{a}) = 1v$$

$$\frac{r \cdot b}{a} + \frac{r \cdot b}{a} = -r$$

$$\Rightarrow -2a = 2ob$$

$$a = -r ob$$

$$a - B = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{a^2 + \epsilon ab}}{\sqrt{a^2}} = \frac{\sqrt{\frac{\epsilon}{a} a^2}}{a^r} = \sqrt{\frac{\epsilon}{a}} \left( \frac{r}{\sqrt{a}} \right)$$

A)

$$( -a, B ) \rightarrow ( 1, B ) \xrightarrow{\text{add } 1} \frac{-a+1}{c} = -r = \frac{-b}{ca} = \frac{x}{y}$$

$$y = a(x - \frac{x}{c}) + y = a(x + r) \cdot \frac{1}{r} = ax^r + \epsilon ax + \epsilon a \cdot \frac{1}{r}$$

$$c = \epsilon a - \frac{1}{c} \cdot \frac{r}{r} \rightarrow a = \frac{1}{r} \rightarrow y = \frac{1}{r} x^r + r x + \frac{r}{r}$$

$$(1, B) \rightarrow B = \frac{1}{r} + r + \frac{r}{c} = \epsilon$$

$$9) \quad x^r + 7x + a = 0 \quad s = -r \quad p = a$$

$$r(a^r + B^r) + a = r(B^r - r p) + a^r = r r - \epsilon a + a^r = 1v + r r$$

$$\rightarrow a^r - \epsilon a = 1v + 1v r$$

$$\alpha + \beta = -9$$

$$\alpha - \beta = \frac{\sqrt{A}}{|a|} = \frac{\sqrt{34 - 4a}}{1} = \sqrt{34 - 4a} = 2\sqrt{9-a}$$

$$\alpha + \beta + \alpha - \beta = -9 + 2\sqrt{9-a} \Rightarrow \alpha = -\frac{9}{2} + \sqrt{9-a}$$

$$\Rightarrow \alpha^2 = 9 + 9 - a + 4\sqrt{9-a}$$

$$= 18 - a + 4\sqrt{9-a}$$

$$\Rightarrow \alpha^2 - 4a = 18 - a + 4\sqrt{9-a} - 4a = 18 - 3a + 4\sqrt{9-a} = 12 + 4\sqrt{9-a}$$

$$\Rightarrow 3a - 4\sqrt{9-a} = 6 - 4\sqrt{9-a}$$

$$\Rightarrow a = 1$$

اگر  $a$  برابر با یک باشد تساوی برقرار می شود

1e)

$$\alpha + \beta = \frac{-b}{a} = \frac{m+14}{r_1}$$

$$\alpha\beta = \frac{1}{r_1} \Rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{\frac{m+14}{r_1}}{\frac{1}{r_1}} = m+14$$

$$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 2 \Rightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{2}{\sqrt{\alpha\beta}} = m+14 + \frac{2}{\sqrt{\frac{1}{r_1}}}$$

$$= m+14 + \frac{2}{\frac{1}{r_1}} = m+14 + 2r_1 = 2 \Rightarrow m = -1$$

$$\Rightarrow mx^2 + cx + c = -x^2 + 4x + 2$$

$$\Rightarrow p = \frac{c}{a} = \frac{2}{-1} = -2$$