

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۱۰۰۰ کلاس دبیر
 نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۱۰۰۰ کلاس دبیر

$$y^2(a-1)x^2 + x + 1 \Rightarrow y^2 - \frac{1}{a}x^2 + x + 1$$

$$-\frac{b}{a}x^2 + 1 = 0 \Rightarrow \frac{-1}{a-1}x^2 = 0 \Rightarrow -1/2(a-1) \Rightarrow 4ax^2 = 0 \Rightarrow ax^2 = 0$$

$$y^2 - \frac{1}{a}x^2 + x + 1 \xrightarrow{(x, y) \rightarrow (x+1/2, y)}$$

$$x^2 - 4x + 1 \Rightarrow (x-4)(x+1) \Rightarrow x=4 \text{ و } x=-1$$

I) $m < 0$ بین درجه ۲ و ۱

$$\Delta = b^2 - 4ac \Rightarrow 40 - 4m^2 > 0 \Rightarrow (5 - 2m)(5 + 2m) > 0$$

انفلات نزدیک

II) $m \in (-\frac{5}{2}, \frac{5}{2})$

I $\cap$ II $= (-\frac{5}{2}, \frac{5}{2})$

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

$$B = \frac{r + \sqrt{\Delta}}{r}$$

$$xB = \frac{r - \sqrt{\Delta}}{r} \times \frac{r + \sqrt{\Delta}}{r} = \frac{r^2 - \Delta}{r^2} = \frac{r^2 - (r^2 - 4r + 4)}{r^2} = \frac{4r - 4}{r^2} = \frac{4}{r}$$

$$x^2 - 8x + 16 = 0$$

$$x^2 - 12x + \frac{4}{r} = 0$$

$$4x^2 - 12x + \frac{4}{r} = 0$$

$$r^2x^2 + B^2 = 12 \Rightarrow r^2x^2 + rB^2 + x^2 - B^2 = 12 \Rightarrow r^2(x^2 + B^2) + (x+B)(x-B) = 12$$

$$r^2(14 - m - 2) + r(\frac{\sqrt{\Delta}}{r}) = 12$$

$$r^2 - 2m + r(\frac{\sqrt{4r^2 - 12r + 4}}{r}) = 12 \Rightarrow r^2 - 2m + \sqrt{4r^2 - 12r + 4} = 12$$

$$r\sqrt{4r^2 - 12r + 4} = 14 + 2m \Rightarrow 14r - 2m = 2\sqrt{4r^2 - 12r + 4} \Rightarrow 7m^2 - 2m + 4 = 0$$

$$m^2 - 12m + 4 = 0 \Rightarrow (m-6)^2 = 32 \Rightarrow m \in (-\sqrt{32}, \sqrt{32})$$

$$S \mid \frac{r}{q} \Rightarrow -\frac{b}{a}x^2 = -b_2/a \Rightarrow b_2 = -6a$$

$$y^2 = a(x-h)^2 + k \Rightarrow a(0-r)^2 + 4 = 0 \Rightarrow a = -1$$

$$y^2 = -x^2 + 4x + 4 = 0 \Rightarrow y^2 = -(x-2)^2 + 8 \Rightarrow y = \pm\sqrt{8 - (x-2)^2}$$

$$y^2 + x^2 - 4x - 4 = 0$$

$$\Delta < 0 \Rightarrow (-1, 0)$$

$$x^2 - vx + 4\beta > 0 \quad \beta > 0$$

$$\Rightarrow x(x^2 - vx + 4\beta) > 0 \Rightarrow x^3 - vx^2 + 4\beta x > 0 \Rightarrow x^2 - vx + 4\beta > 0$$

$$\Rightarrow x(x^2 - vx + 4\beta) > 0 \Rightarrow x > 0 \quad \text{or} \quad x < 0$$

$$x^2 - vx + 4\beta > 0 \Rightarrow \beta > \frac{v}{4} \Rightarrow \beta > \frac{v}{4}$$

$$\frac{4\beta}{v} > 1 \Rightarrow 4\beta > v$$

$$\beta > 0, x < 0 \Rightarrow \boxed{x^2 - vx + 4\beta > 0}$$

$$\frac{1}{\beta} + \frac{1}{x} \geq \frac{5}{p} \Rightarrow \frac{1}{x\beta} \geq \frac{5}{p}$$

6

$$x^2 + mx - 1 > 0 \Rightarrow x^2 - mx - 1 > 0 \Rightarrow x^2 - mx - 1 > 0$$

$$x^2 - mx - 1 > 0 \Rightarrow x^2 - mx - 1 > 0 \Rightarrow x^2 - mx - 1 > 0$$

$$x^2 + mx - 1 > 0 \Rightarrow (x+m)(x-1) > 0 \Rightarrow x > 1 \text{ or } x < -m$$

$$\text{if } x = -\frac{1}{m} \Rightarrow x^2 + mx - 1 > 0 \Rightarrow 1 - 1 < 0 \Rightarrow \text{false}$$

$$\text{if } x = \frac{1}{m} \Rightarrow x^2 + mx - 1 > 0 \Rightarrow 1 - 1 > 0 \Rightarrow \text{true}$$

$$x^2 + mx - 1 > 0 \Rightarrow \frac{-b}{a} \geq \frac{-r}{1} \Rightarrow \boxed{x + B \geq -r}$$

5

7

$$x^2 + mx + n > 0 \Rightarrow x^2 + mx + n > 0 \Rightarrow x^2 + mx + n > 0$$

$$\frac{-n}{m} \geq 1 \Rightarrow 1 - \frac{m^2}{4} - \frac{n}{m} < 0 \Rightarrow 4m - m^2 - 4n < 0 \Rightarrow -m^2 + 4m - 4n < 0$$

$$\Rightarrow m^2 - 4m + 4n > 0 \Rightarrow (m-2)^2 + 4n > 0 \Rightarrow n > -\frac{(m-2)^2}{4}$$

$$y^2 - 4x + 4y > 0 \Rightarrow (y-2)^2 > 4x \Rightarrow \boxed{x < \frac{(y-2)^2}{4}}$$

9

11

$$S \mid r \Rightarrow y = a(x-h)^2 + k \Rightarrow k = a(-r)^2 + 4 \Rightarrow k = a - r^2 \Rightarrow \boxed{a = \frac{k+r^2}{1}}$$

$$A \mid r \Rightarrow y = -\frac{1}{r}(x-r)^2 + 4 \Rightarrow y = -\frac{1}{r}x^2 + \frac{2}{r}x + 4 - \frac{1}{r}$$

$$\Delta > 0 \Rightarrow 4 - 4(-\frac{1}{r} \times r) = 1 \Rightarrow 1 > 0$$

$$x_1 = \frac{-r + r\sqrt{r}}{-1} = r + r\sqrt{r}$$

$$x_2 = \frac{-r - r\sqrt{r}}{-1} = r - r\sqrt{r}$$

$$\frac{1}{r+r\sqrt{r}} + \frac{1}{r-r\sqrt{r}} \geq \frac{r-r\sqrt{r}+r+r\sqrt{r}}{r-r^2} \geq \frac{2}{1-r} \Rightarrow \boxed{\frac{1}{1-r} \geq 1}$$

5

9

$$x^2 - (ka+k)r + (ka^2+4r+r) > 0 \Rightarrow x^2 - \lambda a - \lambda + ka^2 + 4a + r > 0$$

$$ka^2 - ka - 1 > 0 \Rightarrow a^2 - a - \frac{1}{k} > 0 \Rightarrow (a+1)(a-r) > 0 \Rightarrow \begin{cases} a > r \\ a < -1 \end{cases}$$

$$a < 1 \Rightarrow a^2 - \lambda a + 1r > 0 \Rightarrow (a-r)(a-1) > 0 \Rightarrow \begin{cases} a > r \\ a < 1 \end{cases}$$

$$a > \frac{1}{r} \Rightarrow a^2 - \frac{1}{r}a + \frac{r}{r} > 0 \Rightarrow a^2 - \lambda a + 1r > 0 \Rightarrow (a-r)(a-1) > 0 \Rightarrow \begin{cases} a > r \\ a < 1 \end{cases}$$

$$\boxed{x \in \frac{r}{p}, r, 4}$$

5

10