

$$x > a \rightarrow x^2 + 2x$$

$$x \leq a \rightarrow ax - x$$

$$x^2 + 2x = ax - x$$

$$x^2 + 2a = x^2 - x \quad \boxed{a = -1}$$

سوال یک

$$f(x) = \frac{x^2 + a}{2x - b}$$

$$g(x) = 2x + b$$

سوال دو

$$f(1) = \frac{1^2 + a}{1 - b} = 1 \quad g(1) = 1 + b = 1$$

$$\boxed{b = 0}$$

$$\frac{1 + a}{1} = 1 \quad 1 + a = 1 \quad \boxed{a = 0}$$

$$f(1) = \frac{1 + 0}{1 + 0} = \frac{1}{1} = 1$$

$$f(x) = \frac{x^2 + 1}{2x^2 + ax + b}$$

سوال ۳

$$\left. \begin{array}{l} x - a + b = 0 \\ 2x^2 + 2a + b = 0 \end{array} \right\} \begin{array}{l} 1 + 0 + b = 0 \\ 2 - a + b = 0 \end{array} \quad \boxed{a = 1}$$

$$x - a + b = 0 \rightarrow 1 - 1 + b = 0$$

$$\boxed{b = 0}$$

$$f(1) = \frac{1 + 1}{2 - 1 - 0} = \frac{2}{1} = 2$$

$$f(x) = \frac{x^2 - \sqrt{r}}{-rx^2 + ax + b}$$

سوال ۴

$$-r \neq a + b \neq 0 \quad a(x+1)^2 = 0$$

$$a = -r$$

$$a(x^2 + 2x + 1) = 0 \quad -r(x^2 + 2x + 1) = 0$$

$$-rx^2 - 2rx - r = 0 \Rightarrow \boxed{a = -r} \quad \boxed{b = -r}$$

$$a + b = -r - r = -2r$$

$$\textcircled{1} \quad \Delta \geq 0 \rightarrow x^2 - 2x + 1 = 0$$

سوال ۵

$$\boxed{m = -2}$$

$$\textcircled{2} \quad \Delta < 0 \rightarrow m^2 - r < 0 \quad m^2 < r$$

$$\boxed{-r < m < r}$$

$$\text{اجتماع } \textcircled{1} \cup \textcircled{2} \Rightarrow \boxed{-r < m < r}$$

$$r - \frac{1}{x^2} \geq 0$$

$$\frac{rx^2 - 1}{x^2} \geq 0$$

سوال ۶

$$\frac{-\frac{1}{r} \quad * \quad \frac{1}{r}}{+\phi \quad -\phi \quad +}$$

$$\text{ح.ر: } (-\infty, -\frac{1}{r}] \cup [\frac{1}{r}, +\infty)$$

$$mx^2 + 2mx + 1 \geq 0 \quad \boxed{m > 0}$$

سوال ۷

$$\textcircled{1} \quad \Delta = 0 \rightarrow 4m^2 - 4m = 0$$

$$4m(m-1) = 0$$

$$\boxed{m = 1}$$

$$\boxed{m = 0}$$

$$\textcircled{2} \quad \Delta < 0 \quad 4m^2 - 4m < 0$$

$$4m(m-1) < 0$$

$$\frac{0 \quad * \quad 1}{+\phi \quad -\phi \quad +}$$

$$\textcircled{1} \cup \textcircled{2} \Rightarrow 0 < m \leq 1$$

$$\boxed{0 < m < 1}$$

$$a_2 + \frac{1}{r} = 1$$

من ریشه استخراج

$$x \neq a \rightarrow \frac{r^x - 1}{r - 1}$$

$$g(x) = rx + 1$$

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

سوال ۸

$$x = \frac{1}{r} \rightarrow rx + k$$

$$f\left(\frac{1}{r}\right) = r \cdot \frac{1}{r} + k = 1 + k = 2$$

$$\boxed{a_2 = \frac{1}{r}}$$

$$\boxed{k = 1}$$

$$k + a_2 = 1 + \frac{1}{r} = \frac{1}{r}$$

$$rx - \frac{r}{w} a + r = -ra + r$$

سوال ۹

$$g\left(-\frac{r}{w}\right) = rx - \frac{r}{w} + b = -r + b$$

$$-ra + r = -r + b$$

$$-ra + r = -r - r \quad -ra = -4$$

$$\boxed{a = 1}$$

$$\frac{9 - r}{r + 1} = r + b$$

$$\frac{9 - r}{r + 1} = r + b$$

$$\boxed{b = 1}$$

$$a - b = 1 + 1 = 2$$

$$ra^r + ra = r$$

سوال ۱۰

$$ra^r + ra - r = 0$$

$$r(a^r + a - r) = 0$$

$$r(a + r)(a - 1) = 0$$

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

$$\boxed{a = 1}$$