

$$1) f(x) = \begin{cases} ax^2 + 2ax & x \geq a \\ ax - \varepsilon & x < a \end{cases}$$

$$ax^2 + 2ax = ax^2 - \varepsilon$$

$$2ax = -\varepsilon \rightarrow a = -\frac{\varepsilon}{2}$$

حل العرب

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

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

$$\hookrightarrow \psi = \frac{f + b}{b = -1}$$

$$\hookrightarrow \psi = \frac{f + a}{f - b}$$

$$f(1) \rightarrow a = 1$$

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

$$3) f(x) = \frac{2x + 1}{x^2 + ax + b}$$

$$D_f = \mathbb{R} - \{1\}$$

$$\begin{cases} 2 - a + b = 0 \\ 2 + \varepsilon a + b = 0 \end{cases} \Rightarrow \begin{cases} a = -\varepsilon \\ b = -1 \end{cases}$$

$$f(1) = \frac{f(1) + 1}{2(1) - f(1) - 1} = \frac{\Delta}{12}$$

$$4) f(x) = \frac{x^2 - \sqrt{x}}{-\varepsilon x^2 + ax + b}$$

$$D_f = \mathbb{R} - \{1\}$$

$$C(x+1)^2 = 0$$

$$-f(x^2 + \varepsilon a x + 1) = 0 \Rightarrow -\varepsilon x^2 - \varepsilon a x - \varepsilon = 0$$

~~$$-\varepsilon x^2 + \varepsilon a x + \varepsilon = 0 \Rightarrow \varepsilon x^2 - \varepsilon a x - \varepsilon = 0$$~~

$$\begin{cases} b = -\varepsilon \\ a = -\varepsilon \end{cases}$$

$$-\varepsilon = -\varepsilon \Rightarrow -1 - \varepsilon = -12$$

$$5) f(x) = \frac{2x}{(x-1)(x^2 + mx + 1)}$$

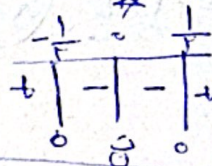
$$D_f = \mathbb{R} - \{1\}$$

$$\textcircled{2} \Delta = 0 \Rightarrow m = 5$$

$$\textcircled{1} \Delta < 0 \Rightarrow m^2 - \varepsilon < 0 \Rightarrow m^2 < \varepsilon \Rightarrow -\sqrt{\varepsilon} < m < \sqrt{\varepsilon} \Rightarrow [-\sqrt{\varepsilon}, \sqrt{\varepsilon}]$$

$$6) f(x) = \sqrt{x - \frac{1}{ax}}$$

$$x - \frac{1}{ax} \geq 0 \Rightarrow \frac{\varepsilon ax^2 - 1}{ax} \geq 0$$



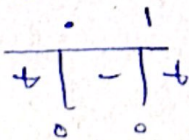
$$E.P.: (-\infty, -\frac{1}{F}] \cup [\frac{1}{F}, +\infty)$$

$$7) f(x) = \sqrt{mx^2 + 2mx + 1}$$

$$mx^2 + 2mx + 1 \geq 0$$

$$a) \textcircled{1} \textcircled{2} \textcircled{3} \textcircled{4} \textcircled{5} \textcircled{6} \textcircled{7} \textcircled{8} \textcircled{9} \textcircled{10} \textcircled{11} \textcircled{12} \textcircled{13} \textcircled{14} \textcircled{15} \textcircled{16} \textcircled{17} \textcircled{18} \textcircled{19} \textcircled{20} \textcircled{21} \textcircled{22} \textcircled{23} \textcircled{24} \textcircled{25} \textcircled{26} \textcircled{27} \textcircled{28} \textcircled{29} \textcircled{30} \textcircled{31} \textcircled{32} \textcircled{33} \textcircled{34} \textcircled{35} \textcircled{36} \textcircled{37} \textcircled{38} \textcircled{39} \textcircled{40} \textcircled{41} \textcircled{42} \textcircled{43} \textcircled{44} \textcircled{45} \textcircled{46} \textcircled{47} \textcircled{48} \textcircled{49} \textcircled{50}$$

$$\textcircled{1} \Delta < 0 \Rightarrow \varepsilon m^2 - \varepsilon m < 0 \Rightarrow \varepsilon m(m-1) < 0$$



$$[0, 1]$$

$$E.P.: [0, 1]$$

$$8) f(n) = \begin{cases} \frac{9n^r - 1}{r^m - 1} & n \neq a \\ r^{m+k} & n = \frac{1}{r} \end{cases}$$

$$g(n) = rn + 1$$

$$r^b | r = r \\ k = 0$$

$$r^m - 1 \neq 0$$

$$ra - 1 \neq 0$$

$$ra \neq 1$$

$$a \neq \frac{1}{r} \rightarrow a = \frac{1}{r}$$

$$\frac{1}{r} + 0 = \frac{1}{r}$$

$$9) f(n) = \begin{cases} \frac{9n^r - 8}{r^m + r} & n \neq \frac{r}{r} \\ r^a n^x & n = \frac{r}{r} \end{cases}$$

$$g(n) = rn + b$$

$$\frac{9n^r - 8}{r^m + r} = rn + b$$

$$-ra + r = -r$$

$$-ra = -r$$

$$a - b = r - (-r) \\ a = r$$

$$(9n^r - 8)(r^m + r) = (rn + r)(r^m + b)$$

$$b = -r$$

$$10) f(n) = \begin{cases} \frac{9n^r - 8}{n - r} & n \neq r \\ ra^m + a^a & n = r \end{cases}$$

$$g(n) = n + r$$

$$ra^m + a^a = r$$

$$a^m + a - r = 0$$

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

$$a = -r \quad a = 1$$