

1

$$f(x) = (1+m)x^2 + (-p+n)x + m+n+2 \rightarrow m = -1, n = 4$$

$$\rightarrow f(x) = -2x$$

$$p+1 = -1 \rightarrow p = -11 \rightarrow p+1 = -1 \rightarrow -11+1 = -10$$

$$\rightarrow k = 10$$

$$m+n+p+k = -1+4-11+10 = -2$$

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الف) $\sqrt{\frac{x-2}{x^2-2x-8}}$ $\xrightarrow{x=t}$ $\frac{t^2-2t-8}{t^2-2t-8} = \frac{t^2-2t-8}{t^2-2t-8} = 1$ $\xrightarrow{t=4}$ $x=2$ $\rightarrow D_f = (-\infty, -2) \cup (2, \infty)$

ب) $\frac{2x^2+1}{x^2-2x}$ $\rightarrow x^2-2x \neq 0 \rightarrow x(x-2) \neq 0 \rightarrow x \neq 0, x \neq 2$ $\rightarrow D_f = \mathbb{R} - \{0, 2\}$

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الف) $\sqrt{x(x-1)}$ $\rightarrow x \geq 0, x-1 \geq 0 \rightarrow x \geq 1$ $\rightarrow D_f = [1, \infty)$

ب) $\sqrt{|x+1|-x^2}$ $\rightarrow |x+1| \geq x^2 \rightarrow x \in [-1, 1]$ $\rightarrow D_f = [-1, 1]$

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$|x-2|-1 \neq k$ $\rightarrow y = k$ $\rightarrow k = 1$

تقاطع دایره مرکز (2,0) و شعاع 1 با خط $y=k$ در دو نقطه قطع کند.

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الف) $y = 2x$ $\rightarrow y = 2x-1$ $\rightarrow y = 2$ $\rightarrow y = 2x+1$ $\rightarrow y = 2x+3$

ب) $x > 1 \rightarrow y = 2x-1$ $x = 2 \rightarrow y = 2$ $-1 \leq x < 0 \rightarrow y = 2x+1$ $-2 \leq x < -1 \rightarrow y = 2x+3$

$$f(x) = g(x) \rightarrow f(0) = g(0) \rightarrow \left. \begin{array}{l} f(0) = 2 \\ g(0) = c \end{array} \right\} \rightarrow \boxed{c = 2}$$

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$$\left. \begin{array}{l} f(1) = g(1) \rightarrow \frac{a+2}{b+1} = 2 \\ f(-1) = g(-1) \rightarrow \frac{-a+2}{-1+b} = 1 \end{array} \right\} \rightarrow \begin{array}{l} a+2 = 2b+2 \\ -a+2 = -1+b \end{array} \rightarrow \begin{array}{l} a = 2b \\ -2b+2 = -1+b \end{array} \rightarrow \begin{array}{l} b = \frac{1}{3} \\ a = \frac{2}{3} \end{array}$$

$$\frac{x^2 - 2x + 3}{x+2} = x - b \rightarrow \frac{x^2 - 2x + 3}{x+2} = x - b$$

$$\rightarrow x^2 - 2x + 3 = x^2 + (a-b)x - ab \rightarrow \begin{array}{l} a-b = -2 \\ ab = -3 \end{array}$$

$$\rightarrow \left. \begin{array}{l} a = 3 \\ b = 1 \end{array} \right\} \rightarrow \boxed{a+b = -2, 2}$$

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$$\sqrt{b-2} + 2k \rightarrow \boxed{b = 2}$$

$$\sqrt{2-2a} + k - 1 \rightarrow \boxed{a = \frac{2}{r}}$$

$$2a - \frac{b}{r} - k = 2 - 2 + 1 = \boxed{1}$$

$$2f(1) - g(1) = k \rightarrow 2k - 2 - 2k = k \rightarrow \boxed{k = -1}$$

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$$D_{f \circ g} = D_f \cap D_g \rightarrow D_g = [-1, +\infty)$$

$$\max D_f = \{v\} \rightarrow \sqrt{m-v} = 0 \rightarrow \boxed{m = v}$$

$$f(r) - g(r) = 5\sqrt{r}$$

$$m+n = 5 + 8\sqrt{r}$$

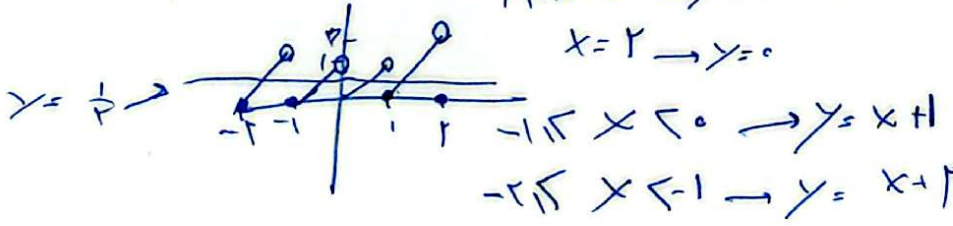
$$\rightarrow r+n - 2\sqrt{r} = 5\sqrt{r} \rightarrow r+n = 7\sqrt{r} \rightarrow \boxed{n = -r + 7\sqrt{r}}$$

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$$y = x - [x] = \frac{1}{r}$$

$$\begin{array}{l} 0 \leq x < 1 \rightarrow y = x \\ 1 \leq x < 2 \rightarrow y = x - 1 \\ x = 2 \rightarrow y = 0 \end{array}$$

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$$\begin{array}{l} -1 \leq x < 0 \rightarrow y = x + 1 \\ -2 \leq x < -1 \rightarrow y = x + 2 \end{array}$$

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