

با آفرین خوشنویس

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$\frac{1}{2} - 1 + 2(-1) = -\frac{5}{2}$ $-(-\frac{\sqrt{3}}{2}) + \frac{\sqrt{3}}{2} - 2(-\frac{\sqrt{3}}{2}) = \frac{5\sqrt{3}}{2}$ $-\frac{\sqrt{3}}{2} + 2(\frac{\sqrt{3}}{2}) - 2(-\frac{\sqrt{3}}{2}) = \frac{4\sqrt{3}}{2}$ $\cos(0) + \sin(\frac{\pi}{2}) = 1 + 1 = 2$	الف ب ج د
$x = a \rightarrow a^2 + 2a = 2a + a + 2 \rightarrow a^2 + a - 2 = 0 \rightarrow (a-1)(a+2) = 0$ $a = 1 \text{ or } -2$ $f(x) = \begin{cases} x^2 + 4x & x \geq 1 \\ 2x + 3 & x \leq 1 \end{cases} \rightarrow f(1) = 2(1) + 3 = 5$	۳
$x = -3 \rightarrow 18 - b = a - 4 \rightarrow a + b = 22$ $f(x) = \begin{cases} 2x^2 - 6 & x+1 \geq 2 \\ a + 2x & -3 \leq x \leq -1 \end{cases}$ $\begin{cases} x+1 \geq 2 \rightarrow x \geq 1 \\ x+1 \leq -2 \rightarrow x \leq -3 \end{cases}$	۴
$x^2 - 4x^2 \neq 0 \rightarrow x^2(x-4) \neq 0 \rightarrow D_f: \mathbb{R} - \{0, 4\}$ $2x^2 + 4x^2 + 2x + 2 \neq 0 \rightarrow 2x^2(x+2) + 2(x+2) \neq 0$ $(x+2)(2x^2+2) \neq 0$ $x \neq -2 \quad \text{همواره مثبت}$ $D_f: \mathbb{R} - \{-2\}$	الف ب د

$\left. \begin{array}{l} x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1 \\ x - 2 \geq 0 \rightarrow x \geq 2 \end{array} \right\} \text{اشتراک} \rightarrow D_f: [2, +\infty)$	الف) ۶ ب) ۵
$\begin{array}{l} 4x - a \xrightarrow{\text{از } x=2 \text{ میزنیم}} 12 - a = 0 \rightarrow a = 12 \\ b - 3x \xrightarrow{\text{از } x=2 \text{ میزنیم}} b - 6 = 0 \rightarrow b = 6 \\ \frac{b}{a} = \frac{6}{12} = \frac{1}{2} \end{array}$	الف) ۸ ب) ۵
$\begin{array}{l} x^2 - x - 6 = 0 \rightarrow (x-3)(x+2) = 0 \rightarrow x = 3 \text{ و } -2 \\ x^2 = t \rightarrow t + \frac{1}{t} - 13 + 26 = 0 \rightarrow (t-4)(t-9) = 0 \rightarrow t = 4 \text{ و } 9 \rightarrow x = \pm 2 \text{ و } \pm 3 \\ \frac{-3}{+} \frac{-2}{+} \frac{-1}{+} \frac{0}{+} \frac{1}{+} \frac{2}{+} \frac{3}{+} \rightarrow D_f: (-\infty, -3) \cup (2, 3) \cup (3, +\infty) \end{array}$	الف) ۹ ب) ۵
$\begin{array}{l} \frac{x^3 - 2x^2 - 5x - 6}{x^2 - x - 6} \xrightarrow{x=1} \frac{x-1}{x^2 - x - 6} \rightarrow x = 3 \text{ و } -2 \\ \frac{x^3 + 2x^2 - 5x - 6}{x^2 - x - 6} \xrightarrow{x=-1} \frac{x+1}{x^2 - x - 6} \rightarrow x = 3 \text{ و } -2 \\ \frac{x^3 - 2x^2 - 5x - 6}{x^2 - x - 6} = \frac{x^3 + 2x^2 - 5x - 6}{x^2 - x - 6} \rightarrow \frac{-x^3 - 4x^2 - 11x - 12}{x^2 - x - 6} = 0 \\ \frac{-x^3 - 4x^2 - 11x - 12}{x^2 - x - 6} = 0 \rightarrow (x+2)(x-3) = 0 \rightarrow x = -2 \text{ و } 3 \end{array}$	الف) ۱۰ ب) ۵