

نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۶ ..... کلاس ..... دبیر .....  
 (۱۳۷۵)  $x^2 - 14x + 40$  بر روی  $(x-1)(x^2 - 14x + 40)$

الف)  $\frac{x^3 - 20x^2 + 31x - 15}{x-1} = x^2 - 19x + 15 = (x-1)(x-3) + 12$   
 $Dy = \mathbb{R} - \{1, 3, 5\}$

ب)  $\frac{3x^3 - x^2 - 14x - 4}{x+1} = 3x^2 - 4x - 4 \neq 0$   
 $3x^2 - 4x - 4 \neq -4 \Rightarrow 3x^2 - 4x = 0 \Rightarrow x(3x-4)=0 \Rightarrow x=0 \vee x=\frac{4}{3}$   
 $Df \in \mathbb{R} - \{-1, 2, -\frac{4}{3}\}$

الف)  $x - \sqrt{3-2x} > 0 \Rightarrow \sqrt{3-2x} < x \Rightarrow 3-2x < x^2 \Rightarrow x^2 + 2x - 3 > 0$   
 $(x-1)(x+3) > 0$   
 $Df = (-\infty, -3) \cup (1, +\infty)$

ب)  $x - \sqrt{3x-2} > 0 \Rightarrow \sqrt{3x-2} < x \Rightarrow 3x-2 < x^2 \Rightarrow x^2 - 3x + 2 > 0$   
 $(x-1)(x-2) > 0$   
 $Df = (-\infty, 1) \cup (2, +\infty)$

الف)  $2\cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{2} \Rightarrow \{2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}\}$

ب)  $2\sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{2} \Rightarrow \{2k\pi - \frac{\pi}{6}, 2k\pi + \frac{\pi}{6}\}$

ج)  $\cot x \neq 1 \Rightarrow \sin x \neq 0 \Rightarrow \{k\pi + \pi, k\pi + \frac{\pi}{2}\}$

د)  $\sin^2 x - 3 \neq 0 \Rightarrow \sin^2 x \neq \frac{3}{2} \Rightarrow \sin x \neq \pm \sqrt{\frac{3}{2}} \Rightarrow \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}, 2k\pi + \frac{5\pi}{3}\}$

الف)  $(x-2)(x-3) > 0 \Rightarrow (-\infty, 2) \cup (3, +\infty)$

ب)  $(x-1)(x-5) > 0 \Rightarrow (-\infty, 1) \cup (5, +\infty)$

ج)  $(x+1)(x+5) \geq 0 \Rightarrow (-\infty, -5] \cup [-1, +\infty)$

د)  $(x-1)(x-4) \leq 0 \Rightarrow [1, 4]$

الف)  $\frac{(x-1)(x-2)}{x-5} < 0 \Rightarrow (1, 2) \cup (5, +\infty)$

ب)  $\frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0 \Rightarrow (-\infty, -1] \cup (5, +\infty)$

$$1) \frac{(x-3)(x-1)}{(x-1)(x^2+1)} \quad \begin{array}{c} * \\ -1 \quad -3 \quad + \\ \hline \end{array} Df = [3, +\infty)$$

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فرضه فرد  $(x-1)(x+1) \neq 0 \quad x \neq \pm 1 \quad Df = \mathbb{R} - \{\pm 1\}$

الف)  $x^2 - 3x > 0 \quad x(x-3) > 0 \quad \begin{array}{c} 0 \quad 3 \\ - \quad + \quad - \quad + \end{array} Df = (-\infty, 0) \cup (3, +\infty)$   
 $Dy = (-3, -1) \cup (1, 3) - \{\pm 1\}$

ب)  $14 - 9x^2 > 0 \quad 9x^2 < 14 \quad 9x^2 < 9 \quad |x| < 3 \quad x < 3 \quad |x-2| > 0 \quad \begin{array}{c} 2 \\ - \quad + \quad - \quad + \end{array} Df = (-\infty, -2) - \{-3\}$   
 $Dy = (-3, -1) \cup (1, 3) - \{\pm 1\}$

ج)  $\frac{(x-3)(x-5)}{x-3} > 0 \quad \begin{array}{c} 3 \quad 5 \\ - \quad + \quad - \quad + \end{array} \quad \begin{array}{c} 1-x \neq 1 \quad x \neq 9 \\ 10-x > 0 \quad x < 10 \end{array} \quad \begin{array}{c} 9 \\ - \quad + \quad - \quad + \end{array} Df = [5, +10) - \{9\}$   
 $Dy = (-3, -1) \cup (1, 3)$

د)  $(4-x)(4+x) > 0 \quad \begin{array}{c} -4 \quad 4 \\ - \quad + \quad - \quad + \end{array} Df = (-\infty, -4) \cup (4, +\infty)$   
 $(x-3)(x-5) > 0 \quad \begin{array}{c} 3 \quad 5 \\ - \quad + \quad - \quad + \end{array} Df = (-\infty, 3) \cup (5, +\infty)$   
 $Dy = (-3, -1) \cup (1, 3)$

$\frac{x(x-1)}{x(x+1)}$   $\begin{array}{c} -1 \quad 0 \quad 1 \\ + \quad - \quad + \quad - \quad + \end{array} Df = (-\infty, -1) \cup [1, +\infty)$

|          |    |   |   |   |
|----------|----|---|---|---|
|          | -1 | 0 | 1 |   |
| $x(x-1)$ | +  | + | - | + |
| $x(x+1)$ | +  | - | + | + |
| $P(x)$   | +  | - | - | + |

$(-\infty, -1) \cup [1, +\infty)$

$x - f(x) > 0 \quad f(x) < x$

$f(x) > 0 \quad \begin{array}{c} -5 \quad -1 \quad 1 \quad 5 \\ - \quad + \quad - \quad + \end{array} Df = (-5, -1) \cup (1, 5)$

$Dy = (-5, -1) \cup (1, 5)$

