

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس فصل اول

الف) $\frac{2x^3 + 3x^2 - 14x + 12}{x-1} = 2x^2 + 5x - 12$ روشن روشی ←
 $(x+3)^{-2}$ $D_f = \mathbb{R} - \left\{ -\frac{1}{3}, 1 \right\}$
 $(x-1)(x+3)(2x-1)$
 (-3) $(\frac{1}{2})$

ب) $\frac{2x^3 + 9x^2 + 10x + 12}{x+1} = 2x^2 + 7x + 12$
 $(x+3)(x+4)$ روشن روشی ←
 $(x+3)$ $D_f = \mathbb{R} - \left\{ -\frac{1}{3}, -\frac{1}{4} \right\}$
 $(x+1)(x+3)(x+4)$
 $(-\frac{1}{4})$ $(-\frac{1}{3})$

الف) $\frac{x^3 - 2x^2 + 2x + 1}{x-1} = x^2 - x + 1$
 $x+3$ $D_f = \mathbb{R} - \{1\}$
 $(x-1)(x^2 - x + 1)$ صواب

ب) $\frac{x^3 - 2x^2 + 2x - 1}{x-1} = x^2 - x + 1$
 $x+3 \rightarrow (-3)$ $+ \frac{-3}{1-1+1}$
 $(x-1)(x^2 - x + 1)$ صواب
 (1)

مخرج نامربع باشد صفر باشد یکبار $x-1 > 0$ و یکبار $x-1 < 0$ در نظریه می آید!

I) $x-1 > 0 \rightarrow x > 1 \rightarrow x^2 - 6x + 5 - 2x + 5 \rightarrow x^2 - 8x + 10 \rightarrow (x-2)(x-5)$
 (2) (5)

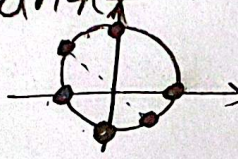
II) $x-1 < 0 \rightarrow x < 1 \rightarrow x^2 + 5x - 6 - 2x + 5 \rightarrow x^2 + 3x - 1 \rightarrow x(x+3)$
 (0) (-3)
 $D_f = \mathbb{R} - \{0, -3, 2, 5\}$

الف) $[x] - 2 \geq 0$
 $[x] \geq 2$
 $D_f = (-\infty, -2]$

ب) $[x] - 2 \geq 0$
 $[x] \geq 2$
 $D_f = \mathbb{R} - \{2, 3\}$

الف) $\sqrt{[x - \frac{1}{3}]} + \sqrt{[x - 2]} \geq 0$
 $[-(x - \frac{1}{3})]$ $x - \frac{1}{3} \geq 0$
 $\{ a \in \mathbb{Z} \rightarrow 0$
 $\{ a \in \mathbb{Z} \rightarrow -1$
 $D_f = \{ x | x = k + \frac{1}{3}, k \in \mathbb{Z} \}$

ب) $\sqrt{[x + \frac{2}{3}]} - 1 + \sqrt{[x + \frac{2}{3}]} \geq 0$
 $2\sqrt{[x + \frac{2}{3}]} \geq 1$ $x + \frac{2}{3} \geq 1$
 $[x + \frac{2}{3}] \geq \frac{1}{4}$ $x \geq \frac{1}{3}$
 $D_f = [\frac{1}{3}, +\infty)$

i) $\sin \alpha \neq 0$ $\cos \alpha \neq 0$ $\tan \alpha \neq -1$  $Df = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{\pi}{2} \right\}$	$\Rightarrow 1 - \epsilon \sin \alpha \geq 0$ $\sin \alpha \leq \frac{1}{\epsilon}$ $-\frac{1}{\epsilon} \leq \sin \alpha \leq \frac{1}{\epsilon} \rightarrow Df$ $Df = \left[k\pi - \frac{\pi}{\epsilon}, k\pi + \frac{\pi}{\epsilon} \right]$	6
ii) $ \sin \alpha - 1 \geq 0$ $\sin \alpha \geq \frac{1}{\epsilon}$ $Df = \left[\frac{1}{\epsilon}k\pi + \frac{\pi}{2}, \frac{1}{\epsilon}k\pi + \frac{5\pi}{2} \right]$	$\Rightarrow 1 - \epsilon \cos \alpha \geq 0$ $\cos \alpha \leq \frac{1}{\epsilon}$ $Df = \left[\frac{1}{\epsilon}k\pi + \frac{\pi}{\epsilon}, \frac{1}{\epsilon}k\pi + \frac{5\pi}{\epsilon} \right]$	7
iii) $1 \leq \alpha^2 + 3\alpha + 1 \leq 1$ I) $\alpha^2 + 3\alpha + 1 \leq 1 \rightarrow \alpha^2 + 3\alpha \leq 0$ $\alpha(\alpha + 3) \leq 0$ $\alpha \in [-3, 0]$ II) $\alpha^2 + 3\alpha + 1 \geq 1 \rightarrow \alpha^2 + 3\alpha \geq 0$ $\alpha(\alpha + 3) \geq 0$ $\alpha \in (-\infty, -3] \cup [0, \infty)$ $Df = [-3, 0] \cup [0, \infty)$	$\Rightarrow 1 \leq \sqrt{\omega - 2\alpha} \leq 1$ $\omega - 2\alpha \leq 1$ $2\alpha \geq \omega - 1$ $\alpha \geq \frac{\omega - 1}{2}$ $\omega - 2\alpha \geq 0 \rightarrow 2\alpha \leq \omega \rightarrow \alpha \leq \frac{\omega}{2}$ $Df = \left[\frac{\omega - 1}{2}, \frac{\omega}{2} \right]$	8
iv) $\alpha > 0$ $Df = (0, \infty)$ $1 - \log_{\frac{1}{\epsilon}} \alpha > 0$ $\log_{\frac{1}{\epsilon}} \alpha < 1$ $\alpha < \frac{1}{\epsilon}$	$\Rightarrow \alpha > 0$ $1 - \log_{\frac{1}{\epsilon}} \alpha > 0$ $\log_{\frac{1}{\epsilon}} \alpha < 1$ $\alpha < \frac{1}{\epsilon}$ $(0, \frac{1}{\epsilon})$	9
v) $r^{\alpha - 2\epsilon} > 0$ $r^{\epsilon\alpha - \alpha^2} \geq 1 \rightarrow \epsilon\alpha - \alpha^2 \geq 0$ $\alpha(1 - \epsilon\alpha) \geq 0$ $Df = [0, \frac{1}{\epsilon}]$	$\Rightarrow \frac{r^{\alpha+1} + \omega}{r^{\alpha+1} + \epsilon} \in \mathbb{W}$ $r^{\alpha+1} + \epsilon \mathbb{W} = r^{\alpha+1} + \omega$ $\epsilon \mathbb{W} - \omega = r^{\alpha+1} - r^{\alpha+1} \mathbb{W}$ $\epsilon \mathbb{W} - \omega = r^{\alpha+1} (1 - \mathbb{W})$ $\frac{\epsilon \mathbb{W} - \omega}{1 - \mathbb{W}} = r^{\alpha+1} \left\{ \alpha = \frac{\epsilon \mathbb{W} - \omega}{1 - \mathbb{W}} \mid \mathbb{W} \in \mathbb{W} \right\}$ $Df \leftarrow$	10