

الف) $F(x) = x^2 + 2$ 	ب) $2F(x)$ 	ج) $F(x-1)$ 	د) $-f(x)$ 	1
الف) $x^2 - 5x + 6 \geq 0$ $(x-2)(x-3) \geq 0$ $x-2 \quad x-3$ $(-\infty, 2) \cup (3, +\infty)$	ب) $x^2 - 4x + 8 < 0$ $(x-5)(x-1) < 0$ $x-5 \quad x-1$ $(1, 5)$	ج) $x^2 + 6x + 8 \geq 0$ $(x+5)(x+1) \geq 0$ $x-5 \quad x-1$ $(-\infty, -5] \cup [-1, +\infty)$	د) $x^2 - 4x + 9 \leq 0$ $(x-1)(x-9) \leq 0$ $x-1 \quad x-9$ $[1, 9]$	2
الف) $\frac{x^2 - 3x + 2}{x-5} < 0$ $(x-1)(x-2) < 0$ $x-1 \quad x-2 \quad x-5$ $(-\infty, 1) \cup (2, 5)$	ب) $\frac{x^2 - 1}{x^2 - 6x + 9} \geq 0$ $(x-1)(x+1) \geq 0$ $(x-3)(x-3) \geq 0$ $x-1 \quad x+1 \quad x-3 \quad x-3$ $(-\infty, -1] \cup (1, 3) \cup (3, +\infty)$	3		
الف) $\sqrt{\frac{x^2 - 1}{x^2 - x}}$ $x^2 - x \neq 0$ $x(x-1) \neq 0$ $x \neq 0$ $x \neq 1$ $x \neq -1$ $\frac{x^2 - 1}{x^2 - x} \geq 0$ $(-\infty, -1) \cup (0, 1) \cup (1, +\infty)$	ب) $\sqrt{\frac{x^2 - 16}{x^2 - 8x + 15}}$ $(x-1)(x-4) \geq 0$ $x \neq 1$ $x \neq 4$ $\frac{x^2 - 16}{x^2 - 8x + 15} \geq 0$ $(x-4)(x+4) \geq 0$ $(x-3)(x-5) \geq 0$ $x-4 \quad x+4 \quad x-3 \quad x-5$ $(-\infty, -4] \cup (1, 3) \cup (3, 5) \cup (5, +\infty)$	4		
الف) $\sqrt{4-x} - \sqrt{2-x} \geq 0$ $4-x \geq 0$ $2-x \geq 0$ $\sqrt{4-x} \leq \sqrt{2-x}$ $4-x \leq 2-x$ $-x \leq -2$ $x \geq 2$ $2-x \leq 4$ $-x \leq 2$ $x \geq -2$ $[-2, 2]$	ب) $\sqrt{4-x} - \sqrt{2-x} \geq 0$ $4-x \geq 0$ $2-x \geq 0$ $\sqrt{4-x} \leq \sqrt{2-x}$ $4-x \leq 2-x$ $-x \leq -2$ $x \geq 2$ $2-x \leq 4$ $-x \leq 2$ $x \geq -2$ $[-2, 2]$	5		

الف) $y = \sqrt{r-2n^2}$ $r-2n^2 \geq 0$
 $2n^2 \leq r$ $n^2 \leq \frac{r}{2}$ $-\sqrt{\frac{r}{2}} \leq n \leq \sqrt{\frac{r}{2}}$
 $[-\sqrt{\frac{r}{2}}, \sqrt{\frac{r}{2}}]$

ب) $y = \sqrt{r|n|-9}$ $r|n|-9 \geq 0$
 $r|n| \geq 9$ $|n| \geq \frac{9}{r}$
 $(-\infty, -\frac{9}{r}] \cup [\frac{9}{r}, +\infty)$

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الف) $y = \sqrt{\frac{|n|+1}{|n|-r}}$

$|n|-r \neq 0$
 $|n| \neq r$
 $n \neq \pm r$
 $D_f = R - \{\pm r\}$

ب) $y = \sqrt{\frac{\sqrt{n}+1}{\sqrt{n}-r}}$ $n \geq 0$

$\sqrt{n}-r \neq 0$ $D_f = [0, +\infty) - \{r^2\}$
 $\sqrt{n} \neq r$
 $n \neq r^2$

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الف) $y = \frac{\sin n}{r \cos n - 1}$

$r \cos n - 1 \neq 0$
 $r \cos n \neq 1$ $\cos n \neq \frac{1}{r}$
 $R - \{2k\pi \pm \frac{\pi}{r}\}$



ب) $y = \frac{\cos n+1}{r \sin n+1}$

$r \sin n+1 \neq 0$
 $r \sin n \neq -1$
 $\sin n \neq -\frac{1}{r}$
 $R - \{2k\pi + \frac{11\pi}{2}, 2k\pi + \frac{3\pi}{2}\}$



ج) $y = \frac{\tan n+r}{\cot n-1}$

$\cot n-1 \neq 0$ $\cot n \neq 1$
 $\tan n \neq \frac{\sin}{\cos}$ $\cos \neq 0$
 $R - \{k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4}\}$



د) $y = \frac{\sin n+1}{r \sin n-r}$

$r \sin n-r \neq 0$
 $r \sin n \neq r$
 $\sin n \neq \frac{r}{r}$ $\sin n \neq 1$
 $R - \{2k\pi + \frac{\pi}{2}, 2k\pi + \frac{5\pi}{2}\}$



$y = \frac{1}{\sqrt{r|n-r|-\frac{1}{r}}}$
 $(\frac{9}{r}, +\infty)$

$r|n-r|-\frac{1}{r} > 0$
 $r|n-r| > \frac{1}{r}$
 $|n-r| > \frac{1}{r^2}$
 $n-r > \frac{1}{r^2}$
 $n-r > -\frac{1}{r^2}$

$|n-r| > \frac{1}{r^2}$
 $n-r > \frac{1}{r^2}$
 $n > \frac{9}{r}$
 $n > (\frac{9}{r})$ $\rightarrow$ $\frac{9}{r}$ $\rightarrow$ $\frac{9}{r}$

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الف) $y = \sqrt{r-2|n|}$ $r-2|n| \geq 0$
 $2|n| \leq r$
 $|n| \leq \frac{r}{2}$

$D_f = (-\infty, -\frac{r}{2}] \cup [\frac{r}{2}, +\infty)$

ب) $y = \sqrt{\frac{|n|}{|n|}}$ $\frac{|n|}{|n|} \geq 0$
 $|n| \neq 0$ $n \neq 0$

$D_f = R - \{0\}$

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