

نام و نام خانوادگی شماره کلاس پاسخنامه تشریحی تکلیف شماره ۴

الف) $\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{(x-1)^2 - x^2}{x(x-1)} \geq 0$
 $\frac{x^2 - 2x + 1 - x^2}{x(x-1)} \geq 0 \rightarrow \frac{-2x + 1}{x(x-1)} \geq 0$
 $\frac{-2x + 1}{x(x-1)} \geq 0 \rightarrow D_f \in (-\infty, 0) \cup [\frac{1}{2}, 1)$

ب) $\frac{15x - 2(x+1)}{(x+1)(x)} \leq \frac{x - 2x - 2}{(x)(x+1)}$
 $\frac{15x - 2x - 2}{(x+1)(x)} \leq \frac{-x - 2}{x(x+1)}$
 $\frac{13x - 2}{(x+1)(x)} \leq \frac{-x - 2}{x(x+1)}$
 $\frac{13x - 2}{x} \leq \frac{-x - 2}{x}$
 $13x - 2 \leq -x - 2$
 $14x \leq 0$
 $x \leq 0$
 $D_f \in \mathbb{R} - \{-2, -1, 0, 1, \frac{5}{2}\}$

الف) $(\frac{1}{x} - 9)(x^2 - 2x) \geq 0 \rightarrow (\frac{1}{x} - 9)(x^2 - 2x) \geq 0$
 $\frac{1}{x} - 9 \geq 0 \rightarrow \frac{1}{x} \geq 9 \rightarrow x \leq \frac{1}{9}$
 $x^2 - 2x \geq 0 \rightarrow x(x-2) \geq 0 \rightarrow x \leq 0 \text{ or } x \geq 2$
 $D_f \in (-\infty, -2] \cup [\frac{5}{2}, +\infty)$

ب) $\sqrt{x-1} + \sqrt{y+1} \leq 3 \rightarrow \sqrt{y+1} \leq 3 - \sqrt{x-1}$
 $\sqrt{x-1} \geq 0 \rightarrow x \geq 1$
 $\sqrt{y+1} \geq 0 \rightarrow y \geq -1$
 $\Rightarrow D_f \in [1, 12]$

الف) $x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \rightarrow x < -1 \text{ or } x > 2$
 $x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1 \text{ or } x \leq -1$
 $\sqrt{x^2 - 1} \neq 0 \rightarrow \sqrt{x^2 - 1} \neq -1 \rightarrow \mathbb{R}$
 $D_f \in (-\infty, -1) \cup (2, +\infty)$

$x^2 + ax - x^2 \geq 0 \rightarrow (x+2)(x-b) \leq x^2 + ax - x^2$
 $(x+2)(x-b) \leq x^2 + ax - x^2$
 $x^2 + (b+2)x - 2b \leq x^2 + ax - x^2$
 $x^2 + (b+2)x - 2b \leq x^2 + ax - x^2$
 $b+2 \leq a$
 $b \leq a - 2$
 $\frac{a+b}{2} \leq 1$
 $\frac{1}{2} + \frac{a}{2} \leq 1$
 $\frac{a}{2} \leq \frac{1}{2}$
 $a \leq 1$

الف) $f(x) - x \geq 0$
 $f(x) \leq x$
 $x^2 - 2x \leq x \rightarrow x^2 - 3x \leq 0$
 $x(x-3) \leq 0$
 $0 \leq x \leq 3$
 $D_f \in [-3, +\infty)$

ب) $f(x) \leq x$
 $x^2 - 2x \leq x$
 $x^2 - 3x \leq 0$
 $0 \leq x \leq 3$
 $D_f \in [-3, +\infty)$

$$f(0) \leq v(a+1) \\ f(x) \leq ra - c \rightarrow$$

$$rf(0) = f(-r) + a \\ r(v(a+1)) \leq ra - c + a \\ 1fa + 1c \leq ra - c \\ 10a \leq -1a \rightarrow a \leq -1/11$$

6

$$f(k\sqrt{r}) = \sqrt{k\sqrt{r}} + \sqrt{k+\sqrt{r}} + r$$

$$f(k+\sqrt{r}) = \sqrt{k+\sqrt{r}} + \sqrt{k\sqrt{r}} + r$$

$$\rightarrow r(\sqrt{k\sqrt{r}} + \sqrt{k+\sqrt{r}}) + r$$

$$A^r = 9 \rightarrow A = \sqrt[3]{9}$$

$$r = \frac{1}{A} = \sqrt[3]{9} + c$$

$$(k\sqrt{r})(k+\sqrt{r}) = 1$$

یہ 2 ایک دوسرے کے
مقلوب ہیں

7

$$rf(n) - cf(-n) \leq en^r - n \xrightarrow{x^r}$$

$$cf(n) - rf(-n) \leq an^r - n$$

$$rf(-n) - cf(n) \leq en^r + n \xrightarrow{x^r}$$

$$cf(-n) - rf(n) \leq 12n^r + n$$

$$-af(n) \leq 10n^r + n$$

$$f(n) \leq -en^r - \frac{1}{a}n$$

8

$$n+r \leq 0 \rightarrow n \leq -r \rightarrow$$

$$(-r+r)f(-r) - r(-r)f(-r+r) \leq c(-r)^r - m(-r) + r(m-1)$$

$$cf(0) \leq 1r + rm + r(m-1) \leq dm + 1d$$

$$n \leq 0 \rightarrow (0+r)f(0) - r(0)f(0+r) \leq c(0)^r - m(0) + r(m-1)$$

$$rf(0) \leq r \times \frac{1}{r^r} - 1 = \left(\frac{r0}{r}\right)$$

$$dm + 1d \leq 9m - r \\ cm \leq 1a \rightarrow m \leq \frac{1a}{c-r}$$

9

$$ax+b + a\left(\frac{1}{n}\right) + b \leq \frac{cn^r - 12n + r}{n}$$

$$\frac{an^r + bx + a}{n} \leq \frac{cn^r - 12n + r}{n} \rightarrow$$

$$a \leq r \\ rb \leq -12 \rightarrow b \leq -9$$

$$f(-1) \leq c(-1) - 9 \leq -9$$

10