

الف) $\frac{x-1}{x} \geq \frac{x}{x+1}$ $\frac{-x^2+1}{(x-1)(x+1)} \geq 0$ $\frac{-1}{x-1} \geq 0$

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

ب) $x+1 \neq 0 \Rightarrow x \neq -1$ $x+2 \neq 0 \Rightarrow x \neq -2$
 $x \neq 0$ و $x-1 \neq 0 \Rightarrow x \neq 1$ $\frac{x}{x-1} + \frac{1}{x+2} \neq 0 \Rightarrow \frac{x}{x-1} \neq -\frac{1}{x+2} \Rightarrow x-1 \neq -x(x+2)$ $x \neq -5 \Rightarrow x \neq \frac{5}{2}$

الف) $\left(\frac{x-1}{x}\right)^2 - 9 \geq 0$ $D_f^2 (-\infty, -2] \cup [2, \infty)$

ب) $x-1 \geq 0$ $x \geq 1$ I_1 $\sqrt{x-1} \geq 0$ I_2 $\sqrt{x-1} \geq 1$ $D_f^2 I \cap I_2 = [2, \infty)$

$x^2-x-2 > 0$ $(x-2)(x+1) > 0$ $\frac{-1}{x-2} > 0$ $D_f^2 I \cap I_2 = (-\infty, -1) \cup (2, \infty)$

$\sqrt{x-1} \geq 1 \Rightarrow x-1 \geq 1$ $(x-1)(x+1) \geq 0$ $\frac{-1}{x-1} \geq 0$ $\sqrt{x-1} + 1 \neq 0$

$-x^2+ax+c \geq 0$ $\frac{-1}{x} + \frac{b}{x} \geq 0$

if $x = -2 \Rightarrow -4 - 2a + c = 0 \Rightarrow a = -\frac{1}{2} \Rightarrow a + b = -\frac{5}{2}$

if $x = 1 \Rightarrow c - \frac{b}{2} - b = 0 \Rightarrow b = -2$

$f(x) \geq x$
 if $x \geq 1 \Rightarrow x^2 \geq x$
 if $x < 1 \Rightarrow x^2 + c \geq x$ $x \geq -5 \Rightarrow D_f^2 = [-5, \infty)$

$\gamma f(0) = f(-1) + a$ $\gamma f(x) = \dots$	$\gamma f(x) = f(-1) + a$ $f(x) = \gamma a + \gamma$ $\gamma a + \gamma = f(-1)$ $\gamma a = -1$ $\gamma = -1$	6
		7
$\gamma f(x) = f(-x) + \gamma x$ $\gamma f(-x) = f(x) + \gamma x$ $f(x) = \gamma x + \gamma x$ $(f(x))' = \gamma = 1$ $f(x) = x + \gamma$		8
$x = -1 \Rightarrow -\gamma f(0) = 1 + \gamma + \gamma m + \gamma n - 1$ $\gamma f(0) = 1 + \gamma$ $\gamma m - \gamma = 1 + \gamma$ $\gamma m = 1 + \gamma$ $\gamma = \frac{1}{m}$		9
$\gamma f(1) = \frac{\gamma + 1 + \gamma}{-1} = \frac{1}{-1} = \gamma f(-1) = f(-1) = -1$		10