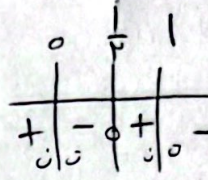
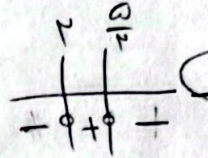


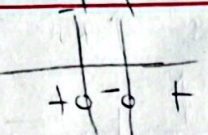
دکتر علی وحید «لرود»

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

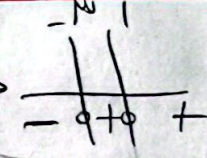
ب) $\frac{1}{x+1} - \frac{2}{x} = \frac{-2-x}{x^2+x} \rightarrow x \neq -1, 0$
 $\frac{1}{x-1} + \frac{1}{x+2} = \frac{x^2+x-1}{x^2+x-2} \neq 0 \rightarrow x \neq -\frac{1}{2}, 1$
 $D_f = \mathbb{R} - \{-1, 0, 1, -\frac{1}{2}\}$

الف) $(\frac{1}{x})^x - 9 \geq 0 \rightarrow (\frac{1}{x})^x = 9 \rightarrow x = 2$
 $22 = 2^x \rightarrow 2 = 2^{\frac{x}{2}} \rightarrow x = \frac{4}{2} = 2$
 $D_f = [2, +\infty)$

ب) $\sqrt{x+1} = 3 - \sqrt{x-1} \rightarrow 3 \geq \sqrt{x-1} \rightarrow 9 \geq x-1 \rightarrow 10 \geq x$

$x^2 - x - 2 > 0 \rightarrow$  $\rightarrow (-\infty, -1) \cup (2, +\infty)$
 $x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1$
 $x \leq -1$
 $D_f = (-\infty, -1] \cup [2, +\infty)$

$-x^2 + ax + 3 \geq 0 \rightarrow -x^2 + ax + 3 = 0 \rightarrow +2a + 1 = 0 \rightarrow a = -\frac{1}{2}$
 $x = b \rightarrow -b^2 - \frac{1}{2}b = -3 \rightarrow b^2 + \frac{1}{2}b = 3 \rightarrow b(b + \frac{1}{2}) = 3$
 $a + b = 1, 5 - 0/5 = 1$
 بازه‌های تابع را خارج می‌کنند.

$\sqrt{f(x)} - x \rightarrow f(x) \geq x \rightarrow 3x - 2 = x \rightarrow 2x - 2 = 0 \rightarrow x = 1$
 $2x + 3 = x \rightarrow x + 3 = 0 \rightarrow x = -3$
 $D_f = [-3, +\infty)$

$f(a) = (a+1)(v) \rightarrow va + v, f(-2) = 3a - 4 \rightarrow 14a + 12 = 3a - 4 \rightarrow 10a = -16 \rightarrow a = -1.6$

$f(2 - \sqrt{2}) \Rightarrow \sqrt{2 - \sqrt{2}} = \frac{\sqrt{4 - 2\sqrt{2}}}{2}$
 $\sqrt{x} + \frac{1}{\sqrt{x}} \Rightarrow \frac{\sqrt{4 - 2\sqrt{2}}}{2} + \frac{2}{\sqrt{4 - 2\sqrt{2}}} = \sqrt{2} \rightarrow f(2 - \sqrt{2}) = \sqrt{2} + 2$
 $f(2 + \sqrt{2}) = \sqrt{2} + 2$
 $D_f = [2 + 2\sqrt{2}, +\infty)$

$f(x) = f(1) \rightarrow 2x^2 f(1) - 3f(-1) = 3 \rightarrow 4f(1) - 9f(-1) = 3$
 $3x^2 f(-1) - 3f(1) = 5 \rightarrow 6f(-1) - 9f(1) = 5$
 $f(1) = \frac{21}{-5} \rightarrow f(x) = -\frac{21}{5}$

$$f(0) \Rightarrow pf(0) = m-1 \rightarrow f(0) = \frac{m-1}{p}$$

$$f(-1) \Rightarrow pf(0) = 14 + pm \rightarrow pf\left(\frac{m-1}{p}\right) = 14 + pm \rightarrow pm - 1 = 14 + pm$$

$$f(0) = \frac{m\left(\frac{14}{p}\right) - 1}{p} = \frac{14m - 1}{p} \leftarrow \frac{14}{p} = m \leftarrow pm = 14$$

$$f(0) = \frac{14}{p}$$

$$f(-1) + f(-1) = \frac{14 + 14 + 14}{-1} \Rightarrow pf(-1) = -14 \rightarrow f(-1) = -9$$