

۲. آزمون برای فصل ۱

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

$D_f = (-\infty, 0) \cup (\frac{1}{x}, 1)$

ب) $x \neq -1, x \neq -2, x \neq 0, x \neq 1$

$\frac{3(n+2) + (n-1)}{(n-1)(n+2)} \neq 0 \Rightarrow \frac{n+5}{(n-1)(n+2)} \neq 0 \Rightarrow n \neq -5$

$D_f = \mathbb{R} - \{-2, -\frac{5}{2}, -1, 0, 1\}$

الف) $(3-x-3^2)(\frac{5}{2}-x) \geq 0$

$D_f = (-\infty, -2] \cup [\frac{5}{2}, +\infty)$

ب) $x-1 \geq 0 \Rightarrow x \geq 1$

$\sqrt[3]{x-1} + \sqrt{y+1} = 3 \Rightarrow \sqrt{y+1} = 3 - \sqrt[3]{x-1} \Rightarrow 3 - \sqrt[3]{x-1} \geq 0 \Rightarrow \sqrt[3]{x-1} \leq 3 \Rightarrow x-1 \leq 27 \Rightarrow x \leq 28$

$D_f = [1, 28]$

$x^2 - x - 2 > 0 \Rightarrow (x-2)(x+1) > 0$

$x^2 - 1 \geq 0 \Rightarrow x \geq 1$

$x^2 \geq 1 \Rightarrow \begin{cases} x \geq 1 \\ x \leq -1 \end{cases}$

$D_f = (-\infty, -1) \cup (2, +\infty)$

$-x^2 + ax + 3 \geq 0 \Rightarrow -(-2)^2 + a(-2) + 3 = -2a - 1 = 0 \Rightarrow a = -\frac{1}{2}$

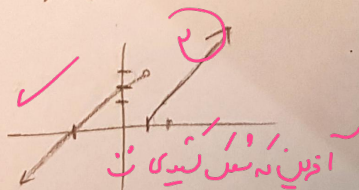
$-x^2 - \frac{x}{2} + 3 \geq 0 \Rightarrow x = \frac{\frac{1}{2} \pm \sqrt{\frac{1}{4} - 4(-1)(3)}}{-2} = -2, \frac{3}{2}$

$\Rightarrow b = \frac{3}{2} = 1, 5$

$a+b = -\frac{1}{2} + \frac{3}{2} = 1$

$f(x) = \begin{cases} 2x-2 & x \geq 1 \\ x+3 & x < 1 \end{cases}$

$D_f = [-3, +\infty)$



$$f\left(\frac{r+\sqrt{p}}{r}\right) = r\left(\frac{r+\sqrt{p}}{r}\right)^p - r\left(\frac{r+\sqrt{p}}{r}\right) = \frac{r^p(r+\sqrt{p})^p}{r^p} - r\left(\frac{r+\sqrt{p}}{r}\right)$$

$$\frac{r}{r} + r\sqrt{p} - r - r\sqrt{p} = -0.1 \text{ (circled)} \quad \text{D}$$

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$$f\left(\frac{a+1}{a-1}\right) = a \rightarrow a \neq 1$$

$$\frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = a \quad \frac{\frac{a+1+a-1}{a-1}}{\frac{a+1-a+1}{a-1}} = a \quad \frac{2a}{2} = a \quad \text{D}$$

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$$f(\sqrt{a^2-1}) = -r$$

$$(\sqrt{a^2-1})^p - r(\sqrt{a^2-1}) = -r \Rightarrow (\sqrt{a^2-1} - r)^p = 0$$

$$\sqrt{a^2-1} = r \Rightarrow a^2-1 = r^2 \Rightarrow a^2 = 1+r^2 \Rightarrow a = \pm\sqrt{1+r^2} \quad \text{D}$$

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$$\left. \begin{array}{l} x+p = r \\ x = 1 \end{array} \right\} \Rightarrow f(1+p) = 1 - 2 + 4 = r$$

$$\left. \begin{array}{l} x+p = -p \\ x = -4 \end{array} \right\} \Rightarrow f(-4+p) = 16 + 10 + 4 = 30$$

$$\left. \begin{array}{l} x+p = r \\ x+p = -p \end{array} \right\} \Rightarrow r \times (-p) = 1 \times r \quad \text{D}$$

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$$r \cos^n \theta + a \cos \theta = 1, a$$

$$r \cos^n \theta + a \cos \theta - 1, a = 0$$

$$\cos \theta = \frac{-a \pm 9}{1} = \frac{1}{r} \Rightarrow \cos \theta = \frac{1}{r} \Rightarrow \tan^n \theta = \frac{1}{r} \quad \text{D}$$

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