

پاسخ تشریحی تکالیف ترکیبی امتحان ریاضی دهم

الف) $y^3 - x = 2x^2$ $y^3 = 2x^2 + x = 2x^2 + 2x \rightarrow (x_1, y_1) \Rightarrow x_1 = x_2 \Rightarrow y_1^3 = y_2^3 \Rightarrow y_1 = y_2$
 تابع هست

ب) $|y| + x^2 = x + 3$ if $x=0 \Rightarrow |y| + 0 = 0 + 3 \Rightarrow |y| = 3 \Rightarrow y = \pm 3$ تابع نیست

ج) $\sqrt{x-4} + |y-2| = 0$ $\sqrt{x-4} = 0 \Rightarrow x=4$ و $|y-2| = 0 \Rightarrow y=2$ تابع هست **نقطه**

د) $x = \cos y$ if $x=0 \Rightarrow \cos y = 0 \Rightarrow y = 90^\circ, 270^\circ$ تابع نیست

تابع ثابت $y = k$

$|3| = x=3, y=1 \Rightarrow f(x)=1$

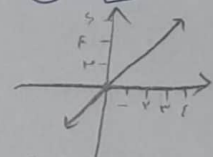


الف) تابع ثابت گذرا از نقطه ۳

$y = ax + b$

$\Rightarrow a=2 \Rightarrow y-2 = 2(x-1)$

$y-2 = 2x-2 \Rightarrow y=2x$



ب) تابع قطعی گذرا از نقطه ۲ با شیب ۲ واحد

تابع همنی $y=x$

الف)

مقدار $a+2b$

$y = ax + b \Rightarrow a=1, b=0 \Rightarrow a+2b = 1 + 2(0) = 1$

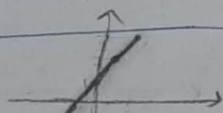
$x = ax + b$

الف) اگر تابع $y = ax + b$ باشد تابع همنی باشد $\min |1| \Rightarrow x = -\frac{b}{2a} = 2 \Rightarrow \frac{-b}{2} = 2 \Rightarrow b = -4$

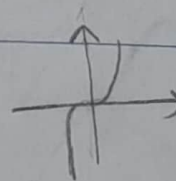
$a+2b = -4 + 2(5) = 6$

ب) اگر درجه دوم $y = ax^2 + bx + c$ باشد مشتقات نقطه میبایست تابع ۲ باشد

الف) $y = 2x + 1$



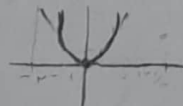
ب) $y = x^2$



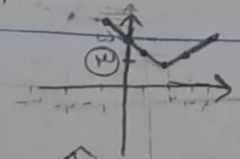
ب) $y = -3x + 1$



ج) $y = x^4$



$y = |x-2| + 3$



$y = -|x+3| + 1$



$$\text{الف) } y = \frac{x+f}{x^2-fx} = \frac{x^2-fx \neq 0 \Rightarrow x(x-f) = 0 \Rightarrow y = \frac{x+f}{x^2-fx^2}$$

$$Df = R - \{0, f\}$$

$$\text{ب) } y = \frac{x+f}{x^2-7x+14}$$

$$Df = R$$

$$\text{ج) } y = \frac{x+f}{x^2+x+f}$$

$$Df = R$$

$$x^2-fx^2 \neq 0 \Rightarrow x^2(x^2-f) = 0 \Rightarrow Df = R - \{f, -f, 0\}$$

$$14-14$$

$$\text{الف) } \sqrt{4-x} + \sqrt{x-2}$$

$$4-x \geq 0 \Rightarrow x \leq 4$$

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

$$x \geq 2$$

$$\text{ب) } \frac{3x+1}{x^2+1} = \frac{x^2+1 \neq 0 \Rightarrow x^2+1=0 \Rightarrow x^2=-1 \Rightarrow \text{امكان ندارد}$$

$$Df = [2, 4]$$

$$Df = R$$

$$\text{د) } \frac{2x+3}{|x|+x^2}$$

$$|x|+x^2 \neq 0 \Rightarrow x \neq 0$$

$$Df = R - \{0\}$$

$$\text{ج) } y = \frac{\sqrt{x-2}}{x-2}$$

$$x-2 \neq 0 \Rightarrow x \neq 2$$

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

$$Df = [2, +\infty) - \{2\}$$

$$\cos 0 = 1 \quad \cos 30 = \frac{\sqrt{3}}{2} \quad \cos 45 = \frac{\sqrt{2}}{2}$$

$$\cos 60 = \frac{1}{2} \quad \cos 90 = 0 \quad \cos 120 = -\frac{1}{2}$$

$$\cos 135 = -\frac{\sqrt{2}}{2} \quad \cos 150 = -\frac{\sqrt{3}}{2} \quad \cos 180 = -1$$

$$\cos 210 = -\frac{\sqrt{3}}{2} \quad \cos 225 = -\frac{\sqrt{2}}{2}$$

$$\cos 240 = -\frac{1}{2} \quad \cos 270 = 0 \quad \cos 300 = \frac{1}{2}$$

$$\cos 330 = \frac{\sqrt{3}}{2}$$

$$\cos 360 = 1$$

$$\sin 0 = 0 \quad \sin 30 = \frac{1}{2} \quad \sin 45 = \frac{\sqrt{2}}{2} \quad \sin 60 = \frac{\sqrt{3}}{2}$$

$$\sin 90 = 1 \quad \sin 120 = \frac{\sqrt{3}}{2} \quad \sin 135 = \frac{\sqrt{2}}{2} \quad \sin 150 = \frac{1}{2}$$

$$\sin 180 = 0 \quad \sin 210 = -\frac{1}{2} \quad \sin 225 = -\frac{\sqrt{2}}{2} \quad \sin 240 = -\frac{\sqrt{3}}{2}$$

$$\sin 270 = -1 \quad \sin 300 = -\frac{1}{2} \quad \sin 330 = -\frac{\sqrt{3}}{2} \quad \sin 360 = 0$$

$$\cos \frac{2\pi}{3} \text{ قریب } \rightarrow \frac{2\pi}{3} = 120^\circ \Rightarrow \cos \frac{2\pi}{3} = -\frac{1}{2} \xrightarrow{\text{قریب}} \frac{1}{2} = \sin \frac{\pi}{6} \text{ و } \frac{5\pi}{6} \quad \text{الف)}$$

$$\cos \frac{11\pi}{6} \text{ قریب } \rightarrow \frac{11\pi}{6} = 330^\circ \Rightarrow \cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2} \xrightarrow{\text{قریب}} -\frac{\sqrt{3}}{2} = \sin \frac{5\pi}{6} \text{ و } \frac{4\pi}{3} \quad \text{ب)}$$