۲. $ra x^2 - \omega x + 11a = x$ $\quad ra x^2 - 4x + 11a$

$f'(x) = 1 \quad ra x - \omega = 1 \quad x = \frac{\omega}{ra}$

$ra\left(\frac{\omega}{ra}\right)^2 - 4\left(\frac{\omega}{ra}\right) + 11a = 0 \quad \frac{9}{ra} - \frac{9}{a} + 11a = 0$

$\frac{-9}{ra} + 11a \quad \frac{4}{ra} = 11a \quad ra^2 = 1 \quad a = \pm\frac{1}{r}$

$a \to +\frac{1}{r} \quad x^2 - \omega x + 9 \to$ از نقطه ۳ دور نمی‌شود پس قابل قبول ✓

$a \to -\frac{1}{r} \quad -x^2 - \omega x - 9$ قابل قبول

۳. $r\omega x^2 - 1r = 0 \quad x = \pm r$

	$-r$		$+r$	
$f(x)$	+	−		+
$f(x)$	↗	↘	min نسبی	↗

$x = +r \quad y = -1r$ ✓

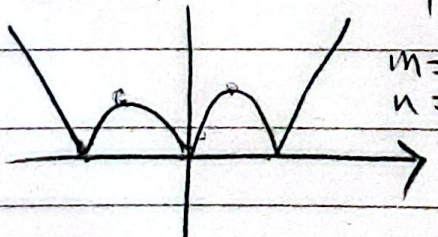
۴. $f(x) = r x^r + ra x - 1rb \quad f(0) = -rb = 0 \quad b = 0$

$f'(-r) = r(-r)^2 + ra(-r) - r(b) = 0 \quad 1r - ra = 0 \quad a = r$

$y = x^r + r x^2 - r \quad x = 0 \to y = -r \quad x = -r \to y = 0$

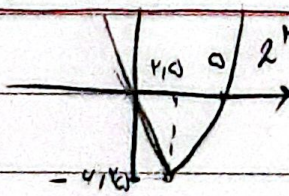
$cd = \sqrt{(-r-0)^2 + (-r-0)^2} = \sqrt{ro} = r\sqrt{\omega}$ ✓

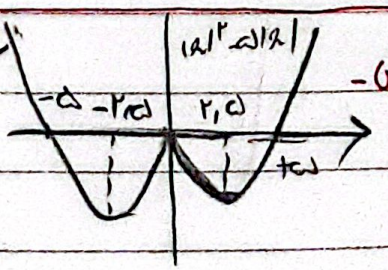
۵. $g(x) = |\,|x|^2 - \omega|x|\,|$



$m = r \quad n = r$

$\frac{r}{r} = 1 = \frac{n}{m}$ ✓



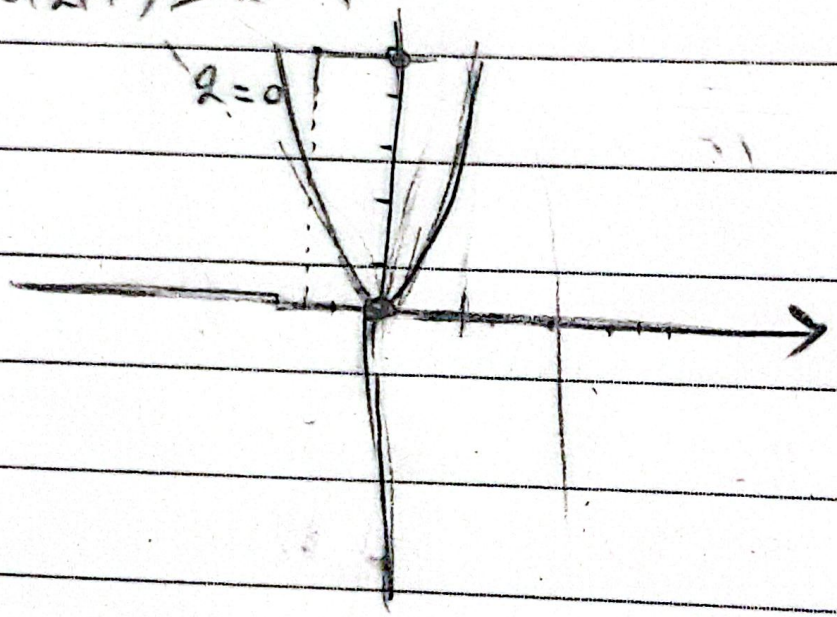


PaKdN

Year. Month. Date. ( ) $\frac{-b}{2a}$ Subject:.....

$x>0 \longrightarrow |x^2+3x|$ $x<0$ $|-x^2+3x|$ -4

$x(x+3)-x=-3$



ب نقطه

ج

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د

Year. Month. Date. ( ) Subject:.....

$x = 1 - m \rightarrow$ مثبت $\quad |1-m| \leq 1 \quad 0 \leq m$ -۹

$(-1+m)(m) - 2 \leq 0 \quad m^2 - m - 2 \leq 0 \quad m^2 - m - 2 = 0$

$(m-2)(m+1) = 0 \quad -1 \quad 2$

$[0, +\infty) \cap [-1, +2] \rightarrow [0, +2]$

	-1		+2	
	+	0	−	+

$\rightarrow [-1, +2]$

$x < 0 \quad \frac{x}{1+x^2} \quad \frac{1(1+x^2) - 2x(x)}{(1+x^2)^2} = 0 \quad 1+x^2-2x^2 = 0 \quad x^2 = 1 \quad x = \pm 1$

غ ق ق ← ۱۰

$x > 0 \quad \frac{x}{1-x^2} \quad \frac{1(1-x^2) + 2x(x)}{1-x^2} = 0 \quad 1-x^2+2x^2 = 0 \quad x^2 = -1$

ق ق

غ ق ق

ی نقطه بحرانی

۱

$$\frac{(1-\frac{a}{3})-(1-a)}{3-1}=\frac{\frac{2a}{3}}{2}=\frac{a}{3}\rightsquigarrow\frac{a}{3}=\frac{a}{x^2}\rightarrow x=\pm\sqrt{3}$$

$x=-\sqrt{3}$ در بازه‌ی $[3\ و\ 1]$ قرار ندارد

پس $x=\sqrt{3}$ تنها قابل قبول است!

۷

$$x\in[0,a]\rightarrow|x-a|=-(x-a)\rightsquigarrow f(x)=-\sqrt[3]{x^2}(x-a)$$

$$=-x^{\frac{5}{3}}+a(x^{\frac{2}{3}})\rightsquigarrow f'(x)=-\frac{5}{3}x^{\frac{2}{3}}+\frac{2}{3}a(x^{-\frac{1}{3}})$$

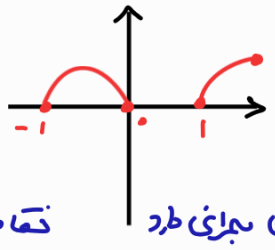
$$-\frac{1}{3}x^{-\frac{1}{3}}(5x-2a)\rightsquigarrow f'(x)\begin{cases}x=0\\ x=\frac{2a}{5}\ \checkmark\ max\rightarrow f(\frac{2a}{5})=1.5\end{cases}$$

$$\sqrt[3]{\frac{4a^2}{25}}\left|\frac{2a}{5}-a\right|=\frac{3}{2}\rightsquigarrow a^2\times\frac{4a^2}{25}=\frac{125}{8}\rightsquigarrow a^6=\frac{5^6}{2^6}\rightarrow\boxed{a=2.5}$$

۸

$$y=x|x|-x\begin{cases}x^2-x & x\geq 0\\ -x^2-x & x<0\end{cases}\rightsquigarrow$$

شکل تابع



مینیمم نسبی ($x=0$)

نقاط max نسبی ($x=1$)

مثل ۴ نقطه‌ای بجای طرد ($x=4$)

$$\frac{12m+n}{12-n}=\frac{4+0}{4}=1$$