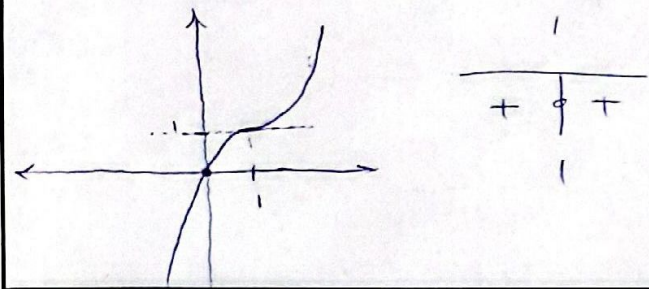


$3x^2 - 9x + 13 = 0$ $x^2 - 2x + 1 = 0$ $(x-1)^2 = 0 \Rightarrow x=1$



The graph shows a cubic curve on a Cartesian coordinate system. A vertical dashed line is drawn at $x=1$. The curve passes through the origin and has a local maximum in the second quadrant and a local minimum in the first quadrant.

الف) $\frac{-3x^2 - 9x(-x^3 + 4)}{x^2} = \frac{-3x^2 + 4x^4 - 36x}{x^2} = \frac{-x^2 - 12x}{x^2} = \frac{-x^3 - 12x}{x^4}$

$\Rightarrow -1 - \frac{12}{x^3} = 0 \Rightarrow \boxed{x=12}$

در $x=0$ مشق ناپذیر است در دامنه نیست

$D_f = \mathbb{R} - \{0\}$

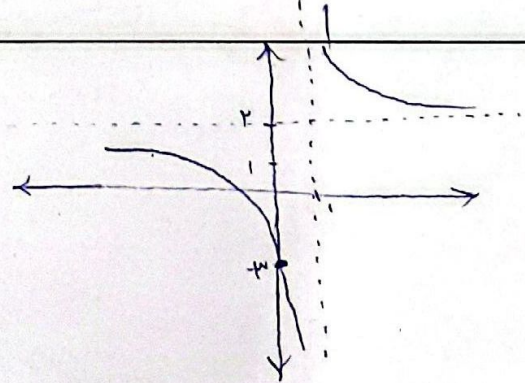
لازمه ریاضی صفحه

الف) $\frac{(-2x+4)(x-1) + x^2 - 4x - 1}{(x-1)^2} = \frac{-2x^2 + 2x + 4x - 4 + x^2 - 4x - 1}{(x-1)^2} = \frac{-x^2 + 2x - 5}{(x-1)^2}$

$\Rightarrow \frac{-x^2 + 2x - 5}{(x-1)^2} \Delta < 0 \Rightarrow$ ندارد

ب) $\frac{(2x-4)(x-1) - x^2 + 4x - 13}{(x-1)^2} = \frac{2x^2 - 2x + 4x - 4 - x^2 + 4x - 13}{(x-1)^2} = \frac{x^2 - 2x + 1}{(x-1)^2} = 1$

$y = 7$ $(2, 7)$ جانب افقی
 $x = 1$ جانب عمودی



The graph shows a function with a vertical asymptote at $x=1$ and a horizontal asymptote at $y=7$. The curve passes through the point $(2, 7)$ and has a local minimum in the third quadrant.

$y = a$ $(b, a) = (2, 3)$ افق
 $x = b$ $b = 2, a = 3$

$\frac{2x+3}{x-2}$

با da و db همگرا نیستند و تقریبی کنیم :

$\frac{3x^2(x^2-1) - 4x(x^3)}{(x^2-1)^2} = \frac{3x^4 - 3x^2 - 4x^4}{(x^2-1)^2} = \frac{-x^4 - 3x^2}{(x^2-1)^2} = 0$

$D_f = \mathbb{R} - \{\pm 1\}$ $x^2 - 3 = 0 \Rightarrow x = \pm\sqrt{3}$

مركز تقارن : (2,3)

$m=1 \Rightarrow y = x+1$

$m=-1 \Rightarrow y = -x+5$

6

ب9

تعلی که ف در آنها صفر و با وجود ندارد

7

$x^2 - ax + r \Rightarrow y' = 2x - a = 0 \Rightarrow x = \frac{a}{2}$

$\Delta > 0 \Rightarrow a^2 - 4r > 0 \Rightarrow a > 2\sqrt{r} \Rightarrow (-\infty, 2\sqrt{r}) \cup (2\sqrt{r}, +\infty)$
 $a < -2\sqrt{r}$

دیش مرتبه یک کامل
 قدری تلف

8

$\frac{x^2 - r}{(x^2 + x + r)^2} = 0 \Rightarrow x = \pm\sqrt{r}$

x	$-\sqrt{r}$	\sqrt{r}
y'	+	-
y	↗	↘

max : $(-\sqrt{r}, \frac{r}{r-\sqrt{r}})$
 min : $(\sqrt{r}, \frac{r}{r+\sqrt{r}})$

$\frac{1/r}{1/r} = \frac{1}{\sqrt{r}}$

9

$y = (x+r)(x-1) \Rightarrow a=1, b=-r$
 $y' = r(x^2+x-r)(2x+1) \Rightarrow y' = (x+r)(x-1)(2x+1)$

$y = (x^2+x-r)^2$

	$-r$	$-\frac{1}{r}$	1
y'	-	+	-
y	↘	↗	↘

max طول $-\frac{1}{r}$
 min $y(x^2+x-r)^2$
 $y' = r(x^2+x-r)(2x+1)$

	$-r$	$-\frac{1}{r}$	1
y'	-	-	+
y	↘	↘	↗

min طول $-\frac{1}{r}$

اصلاً صفر

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