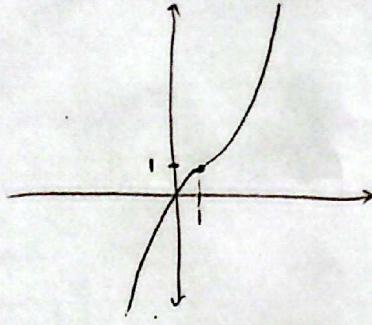


$$y = x^3 - 3x^2 + 3x \rightarrow y' = 3x^2 - 6x + 3$$

$$3x^2 - 6x + 3 = 0 \rightarrow x=1, y'=0$$

	$-\infty$	$1$	$+\infty$
$y'$	$+$	$+$	$+$
$y$	$\nearrow$	$\searrow$	$\nearrow$

$x=1$   
تنهایی  
بطنی



$$x=1 \rightarrow y = 1 - 3 + 3 = 1$$

الف)  $y = \frac{-x^2 + c}{x^2}$

ب)  $y = \frac{x^m}{x^2-1} \Rightarrow y = \frac{x^m(x^2-1) - 2x(x^m)}{x^2+1-2x^2}$

$$y' = \frac{-2x^2(x^m) - 2x(-x^2+c)}{x^4} = \frac{-2x^2 - 2cx}{x^4} \Rightarrow$$

$$\frac{x^m(x^2-3)}{(x^2-1)^2} = 0 \Rightarrow \begin{matrix} x=0 \\ x=3 \end{matrix}$$

$x(-)$

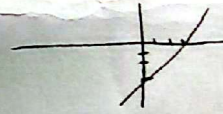
$$1 + \frac{1}{x^2} = 0 \Rightarrow \frac{1}{x^2} = -1 \Rightarrow x^2 = -1$$

$\Rightarrow m = -2$   
تقاطع عرضی

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

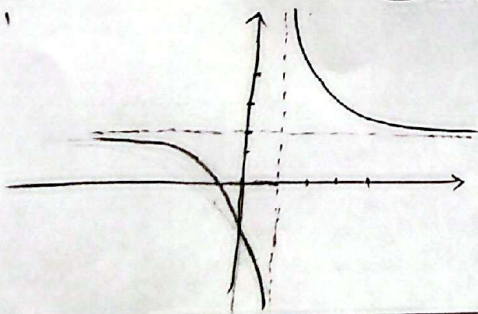
ب)  $y' = \frac{x^2 - 2x + 1}{(x-1)^2} = 1 \Rightarrow y = \frac{(x-1)(x-2)}{x-1} = x-2$

	$-\infty$	$1$	$+\infty$
$y'$	$-$	$+$	$-$
$y$	$\searrow$	$\nearrow$	$\searrow$



$$y = \frac{2x + c}{x-1}$$

الف)  $x=1$  جانب قائم است،  $x=2$  جانب افقی است



از این نواحی می‌گذرد

$$y = \frac{ax + c}{x-b} \xrightarrow{\text{مربوط به}} y = \frac{2x + c}{x-1}$$

$$a=2, b=1$$

الف)

$$2x + c = y(x-1)$$

$$x(2-y) = -c - y \rightarrow x = \frac{-c-y}{2-y} \rightarrow f^{-1}(y) = \frac{2x+c}{x-1}$$

$$2x - yx = -c - y$$

ب)

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$$y = \frac{n+1}{n-r} \rightarrow \frac{n+1}{r}$$

$$y-r = 1(n-r) \rightarrow y = n+1$$

$$y-r = -1(n-r) \rightarrow y = -n+r$$

6

7

8

9

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