عرفان عبداللهی — تکلیف شمارهٔ ۲۸ — دوازدهم سری A

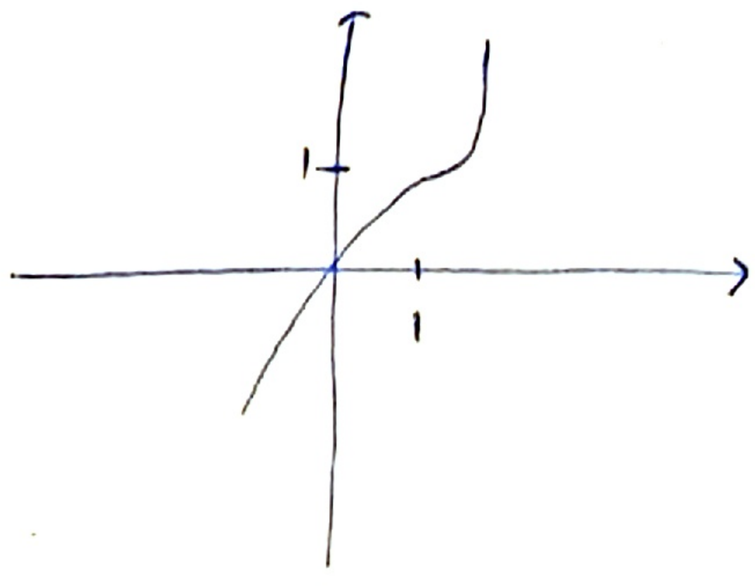
۱-

$f'(x) = 3x^2 - 6x + 3$

$f'(1) = 0$

$f'(x) = 3(x-1)^2$

$f(x) = (x-1)^3 + 1$

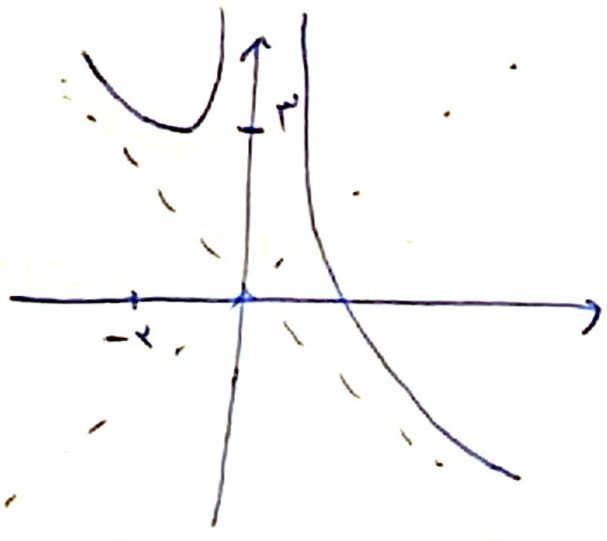


نقطهٔ $x=1$ بطرفی است.

۲-

الف) $\frac{-x^3+4}{x^2} = -x + \frac{4}{x^2}$ $\longrightarrow$ $f'(x) = -1 + \frac{-8x}{x^4} = -1 - \frac{8}{x^3}$

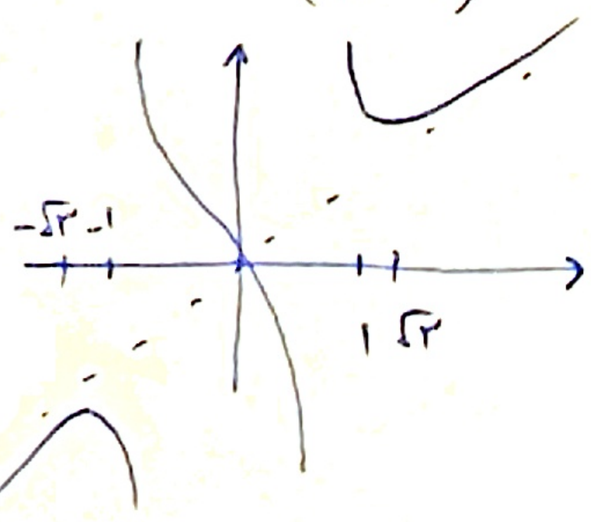
$f'(x) = 0 \longrightarrow f'(-2) = 0$

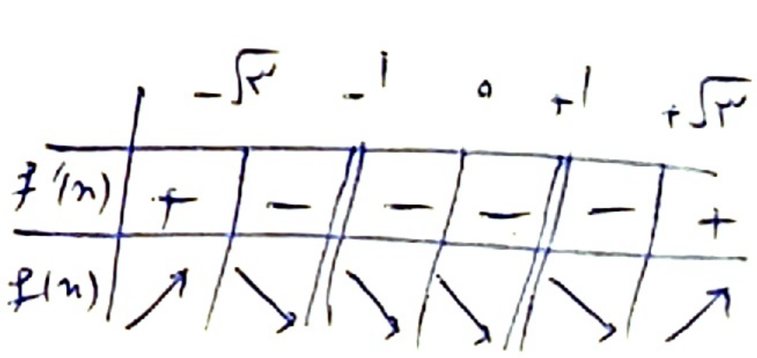


نقطهٔ $x=-2$ بطرفی است.

ب) $f'(x) = \frac{3x^2(x^2-1) - (2x)(x^3)}{(x^2-1)^2}$

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

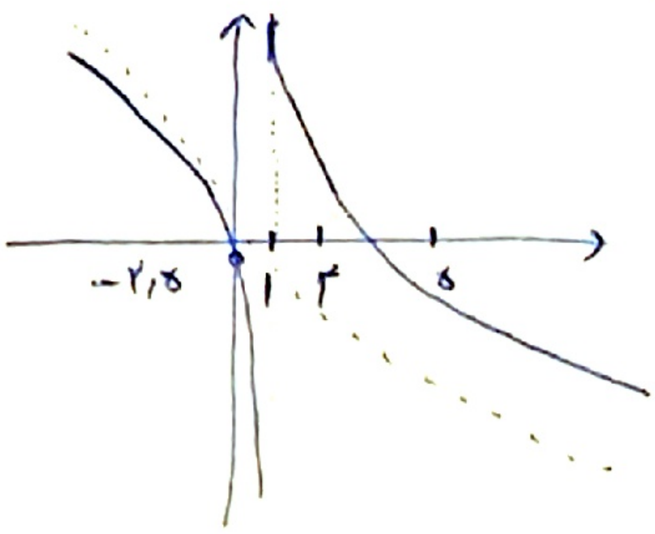




نقاط $x = \pm\sqrt{3}$ ، $x=0$ طرفی هستند.

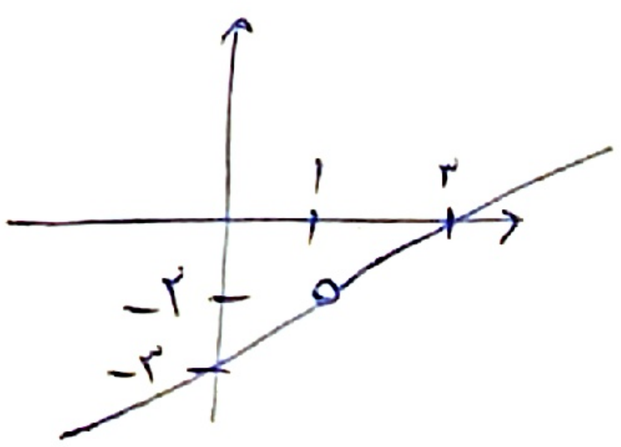
۳-

ب) $\frac{-x^2+2x+1}{x^2+x-1} \longrightarrow f'(x) = \frac{-x^2+2x-5}{(x-1)^2} \longrightarrow \Delta < 0$



نقطه بحرانی ندارد.

ب) $\frac{x^2-4x+3}{x-1} = \frac{(x-1)(x-3)}{(x-1)} = x-3 \quad , \quad x=1 \notin D_f$

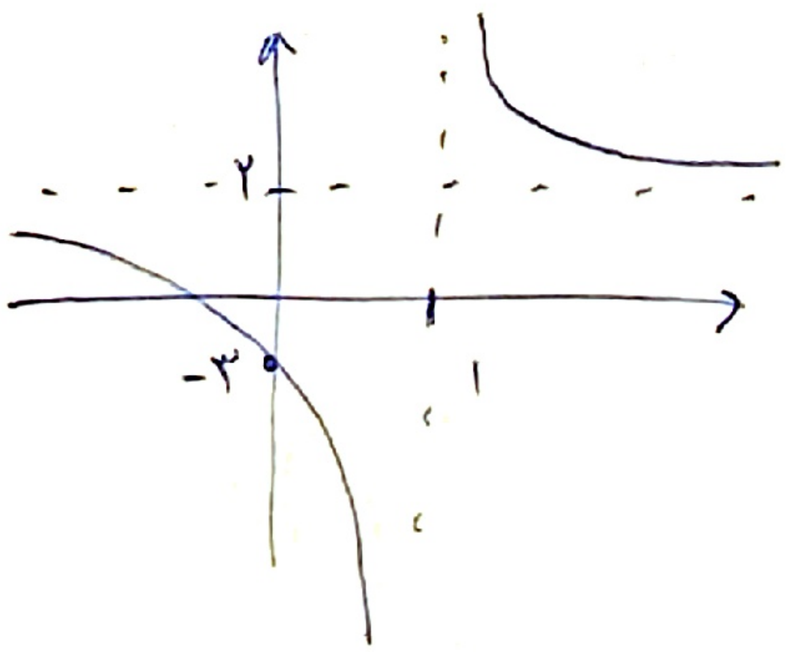


نقطه بحرانی ندارد.

۴-

الف) مجانب افقی $y=2$ و مجانب عمودی $x=1$ است.

ب) از تمامی نواحی می گذرد.



$M(2,3)$

۵-

الف) $a=3$, $b=2$ است.

ب)

$x-b \longrightarrow 2-b=0$

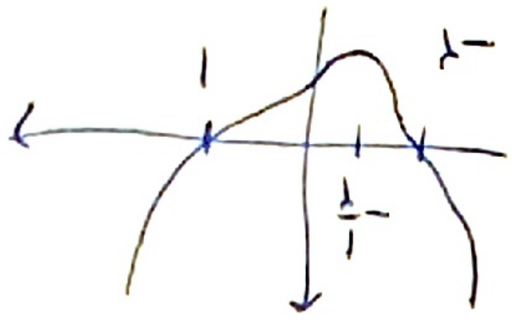
$a=2$

ج) $f(x)=\frac{2x+4}{x-2} \longrightarrow f(x)^{-1} = \frac{2x+4}{x-2}$

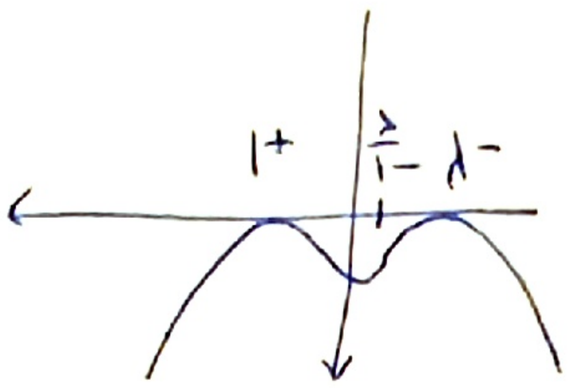
۶-

$M(2,2) \longrightarrow d_1 = x+1$

$d_2 = -x+5$



g(m)



f(m)

حدد النقط الحرجة.

$g(m) = (m^2+2m-3)^2 = (m-1)^2(m+3)^2 \rightarrow g'(m) = 2(m-1)(m+3)(2m+2)$

$f(m) = (m^2+2m-3)^2 = (x-1)^2(x+3)^2 \rightarrow f'(x) = 2(x-1)(x+3)(2x+2)$

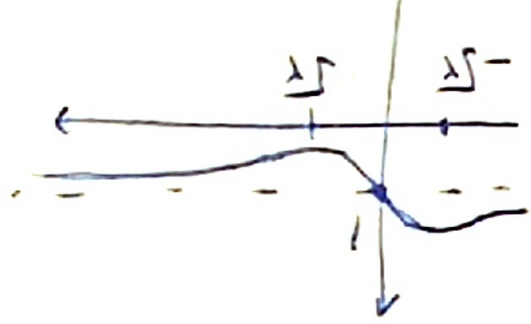
-١٥

$b=-2, \quad a=1$

$f(x) = x^2 \cdot f(-5) = \frac{12}{12-2} = \frac{12}{14} = \frac{6}{7}$

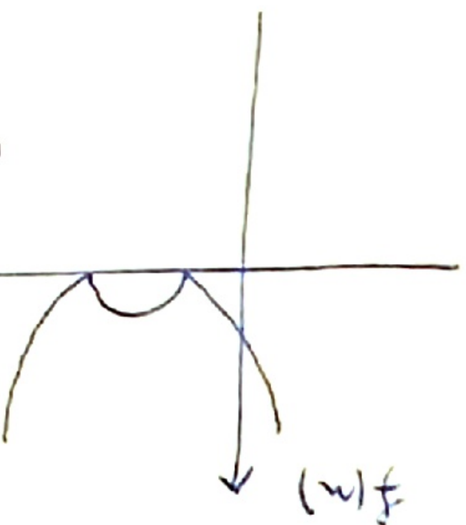
$f(5) = \frac{2}{2+5^2} \qquad f(-5) = \frac{2}{2-5^2}$

$x = \pm 5^2$



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

-٩



$x^2-4x+2 \longrightarrow \Delta > 0$

$\Delta' - \Delta > 0$

$a^2 > 4 \longrightarrow a > \sqrt{4}$

$a < -\sqrt{4}$

-٨

-٧ حدد مطلقا.