6. $f(x) = \dfrac{3x^2}{x^2-9}$)P $\quad$ P' = 6x
$\qquad\qquad\qquad$)Q $\quad$ Q' = 2x

① $\dfrac{P'Q - PQ'}{Q^2}$

$f'(x) = \dfrac{6x(x^2-9) - 3x^2(2x)}{(x^2-9)^2}$

$\qquad = \dfrac{3x[2(x^2-9) - x(2x)]}{(x^2-9)^2}$

$f'(x) = \dfrac{3x \cdot 2[x^2-9 - x^2]}{(x^2-9)^2}$

$\qquad = \dfrac{6x(-9)}{(x^2-9)^2}$

$\qquad = \dfrac{-54x}{(x^2-9)^2}$

② $\quad -54x = 0 \qquad\qquad (x^2-9)^2 = 0$

$\dfrac{-54x}{-54} = \dfrac{0}{-54} \qquad x^2 - 9 = 0$

$\qquad x = 0 \qquad\qquad x^2 = 9$

$\qquad\qquad\qquad\qquad x = \pm\sqrt{9} \qquad$ C.N.'s

$\qquad\qquad\qquad\qquad x = \pm 3$

③

	$-\infty$	$X=-3$	$X=0$	$X=3$	∞
TEST CASES	$X=-4$	$X=-1$	$X=1$	$X=4$	
PLUGING DERIV.	$\dfrac{-54x}{(x^2-9)^2}$	$\dfrac{-54x}{(x^2-9)^2}$	$\dfrac{-54x}{(x^2-9)^2}$	$\dfrac{-54x}{(x^2-9)^2}$	
	$\dfrac{-54(-4)}{+}$	$\dfrac{-54(-1)}{+}$	$\dfrac{-54(1)}{+}$	$\dfrac{-54(4)}{+}$	
	$\dfrac{+}{+}$	$\dfrac{+}{+}$	$\dfrac{-}{+}$	$\dfrac{-}{+}$	
	/	/	\	\	

INC $(-\infty, -3)$
INC $(-3, 0)$
DEC $(0, 3)$
DEC $(3, \infty)$