Graph the function. Find the inflection and critical points (if any) and point out the absolute Maxima.

$f(x) = \frac{24x}{x^2+9}$

$f'(x) = \frac{24(x^2+9)-2x*24x}{(x^2+9)^2} = \frac{24(9-x^2)}{(x^2+9)^2}$

critical points: $f'(x) = 0$

$\frac{24(9-x^2)}{x^2+9} = 0 \quad => x = \pm 3$

$f''(x) = 24\frac{\left(-2x(x^2+9)^2-2(x^2+9)2x(x^2-9)\right)}{(x^2+9)^4} = 24\frac{\left(-2x(x^2+9)-4x(9-x^2)\right)}{(x^2+9)^3} = 24\frac{2x(x^2-27)}{(x^2+9)^3}$

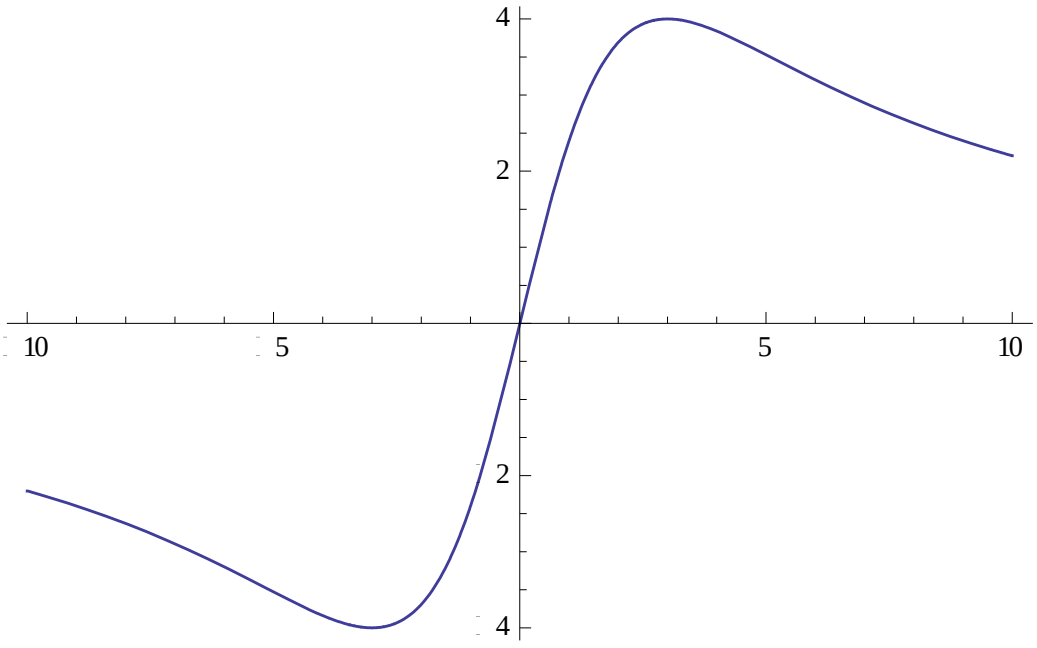
inflection points: $f''(x) = 0$

$24\frac{2x(x^2-27)}{(x^2+9)^3} = 0 \quad => x = 0, \pm 3\sqrt{3}$

absolute Maxima: $f'(x) = 0$ and $f''(x) < 0$

$f''(3) < 0$ - Maxima

$f''(-3) > 0$ - Min



Answer:

critical points: $x = \pm 3$

inflection points: $x = 0, \pm 3\sqrt{3}$

absolute Maxima: $x = 3$