



<u>Example</u>: Determine open intervals on which the graph of $f(x) = x^3 - 3x^2 + 1$ is concave up or concave down.

<u>Example</u>: Determine open intervals on which the graph of $f(x) = \frac{x^2+1}{x^2-4}$ is concave up or concave down.

A point of inflection on the graph of f is a point (f ``(x) = 0) where concavity changes from down to up (or vice versa) <u>Example</u>: Find the points of inflection and discuss concavity of $f(x) = 2x^4 - 8x + 3$

Second derivative test when f'(c) = 0 and f''(c) exists:

1. If f'(c) > 0, then f has a relative minimum at (c,f(c))2. If f'(c) < 0, then f has a relative maximum at (c,f(c))

<u>Example</u>: Find all relative extrema of $f(x) = x^3 - 5x^2 + 7x$