

Increasing and Decreasing Functions

Example

Find when the function $f(x) = x^3 + 4x^2 - 3x + 2$ is increasing and when it is decreasing

$$f'(x) = 3x^2 + 8x - 3$$

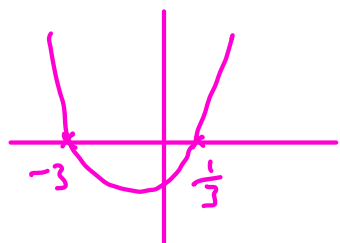
$f(x)$ is increasing when $f'(x) > 0$

$f(x)$ is decreasing when $f'(x) < 0$

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

$$y = f'(x)$$

$$f'(x) \Rightarrow x = \frac{1}{3} \text{ or } x = -3$$



$f(x)$ is increasing for $x < -3$
and for $x > \frac{1}{3}$

$f(x)$ is decreasing for
 $-3 < x < \frac{1}{3}$

Alternatively

Could find turning points
and rely on
knowledge of graph

