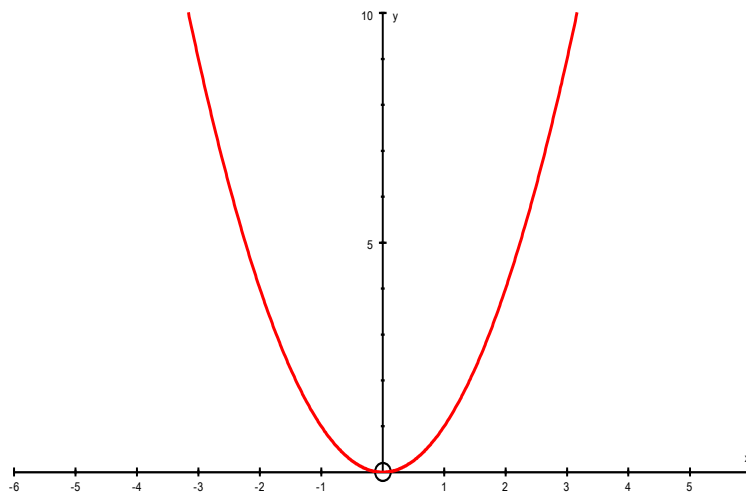


INCREASING and DECREASING FUNCTIONS

Consider the simple graph of $y = x^2$



For $x < 0$, y decreases as x increases. The gradient is **negative**.
For $x < 0$, y is a decreasing function of x .

For $x > 0$, y increases as x increases. The gradient is **positive**.
For $x > 0$, y is an increasing function of x .

For $x = 0$, y is *neither* decreasing nor increasing. The gradient is zero and has a **stationary value**. The origin $(0, 0)$ is a **stationary point**.

A function, $f(x)$ is increasing between two points if $f'(x) > 0$ between these points

A function, $f(x)$ is decreasing between two points if $f'(x) < 0$ between these points

Try these....

(a) Given that $y = -7 + 9x^2 - 2x^3$, find **the range** of values for x for which y is an **increasing** function.

(b) Given that $f(x) = x^3 + 6x - 2$, show that $f(x)$ is an increasing function for all values of x