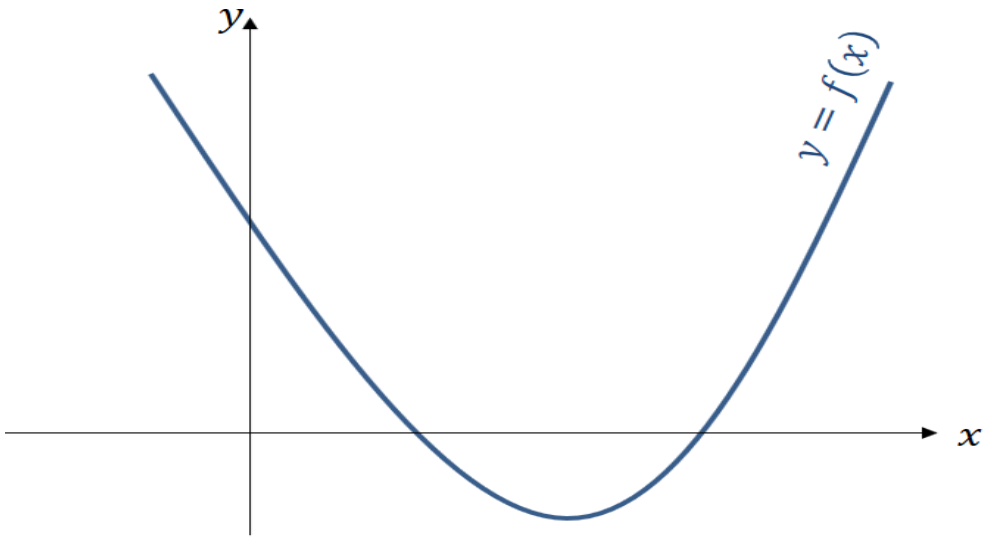
Sketching Gradient Functions

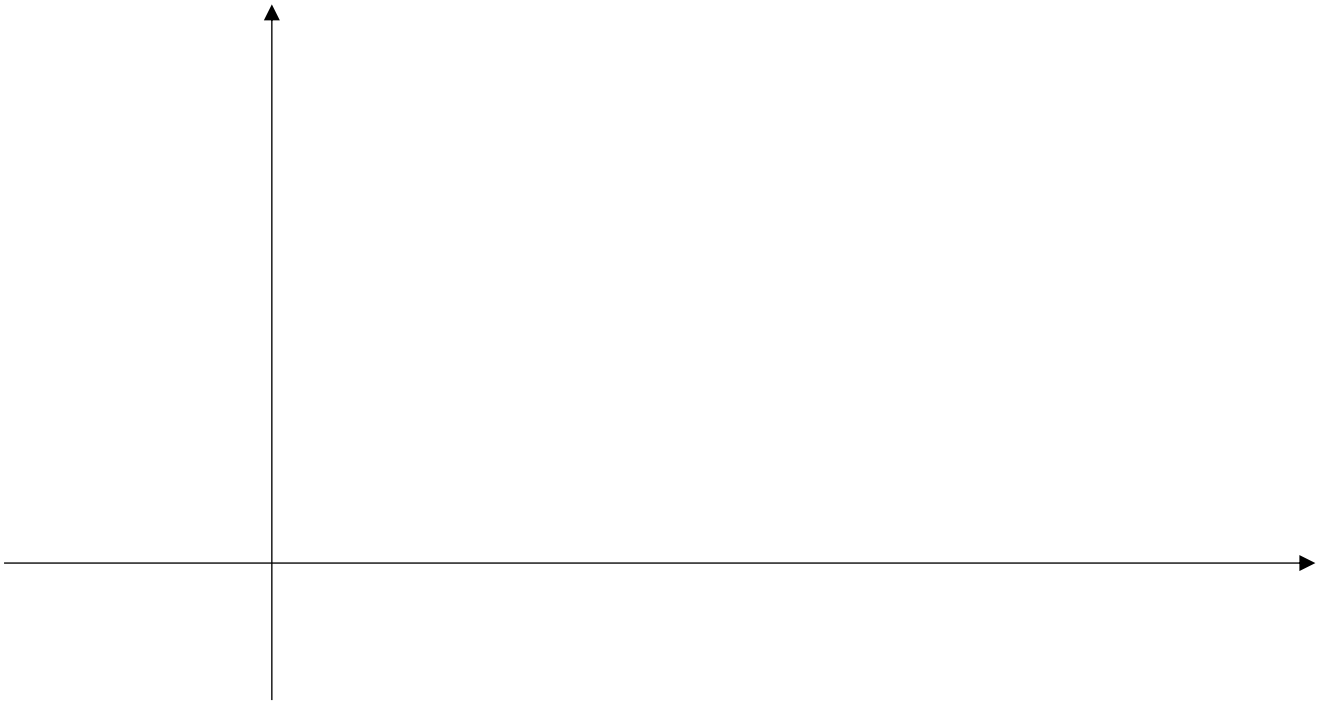
Example

Sketch the gradient function for the function $f(x) = x^2 + 3x + 2$

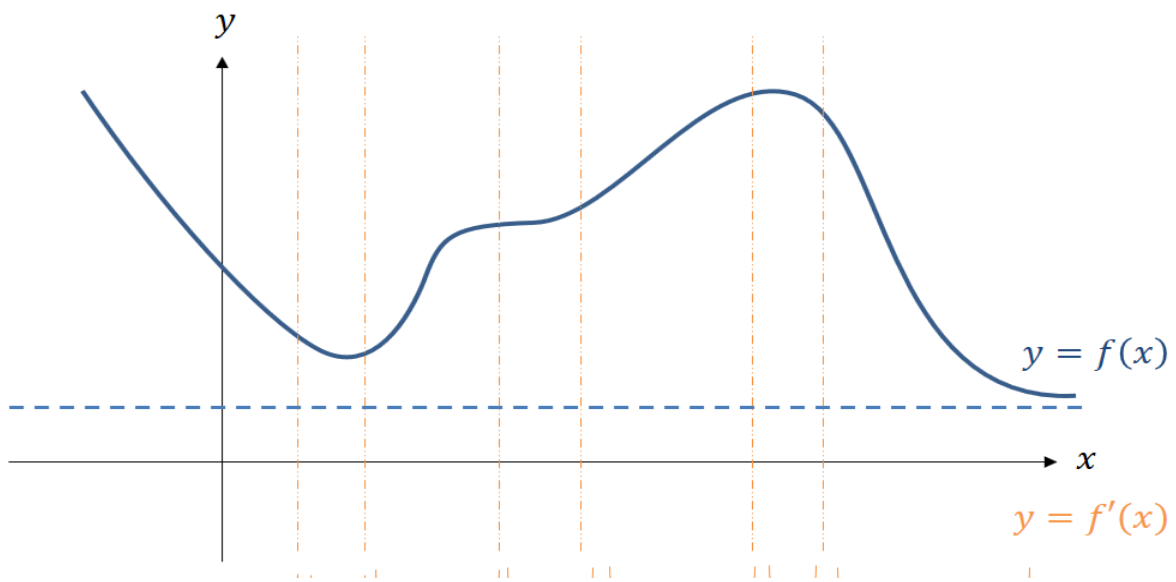
Sometimes **you won't be given the function explicitly**, you will only be given **the sketch**.

Example

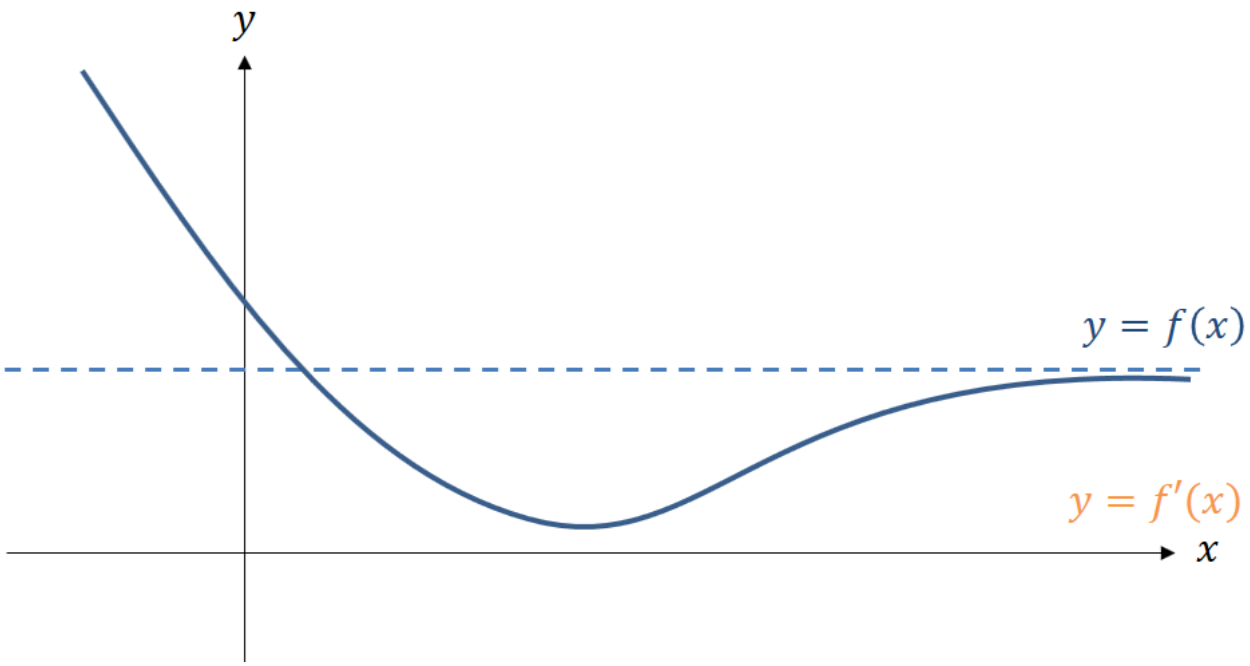


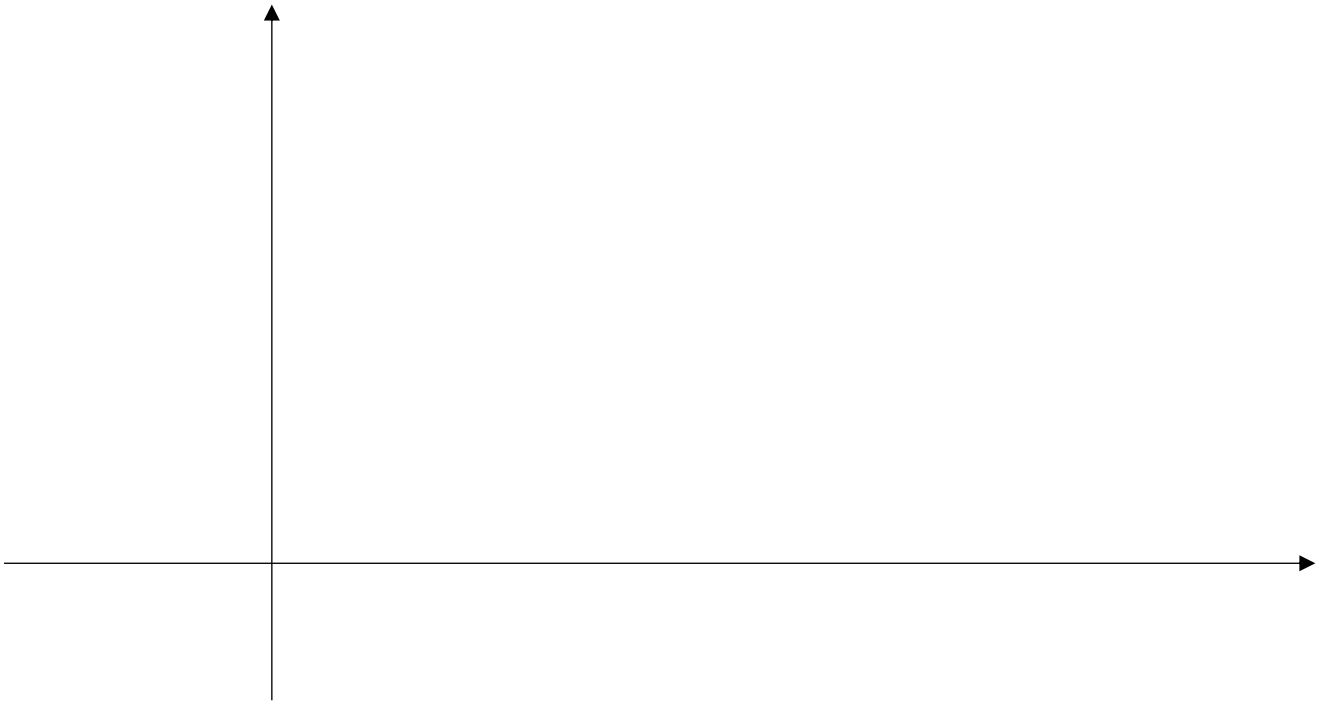


Example 2



Test Your Understanding





Summary

Y = f(x)	Y = f'(x)
max / min	Cuts the x - axis
Point of inflection	Touches the x – axis
Positive gradient	Above the x - axis
Negative gradient	Below the x - axis
Vertical asymptote	Vertical asymptote
Horizontal asymptote	Horizontal asymptote at x-axis

Extension

[MAT 2015 1B]

$$f(x) = (x + a)^n$$

where a is a real number and n is a positive whole number, and $n \geq 2$. If $y = f(x)$ and $y = f'(x)$ are plotted on the same axes, the number of intersections between $f(x)$ and $f'(x)$ will:

A) always be odd

B) always be even

C) depend on a but not n

D) depend on n but not a

E) depend on both a and n.