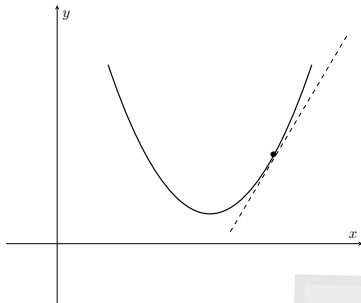
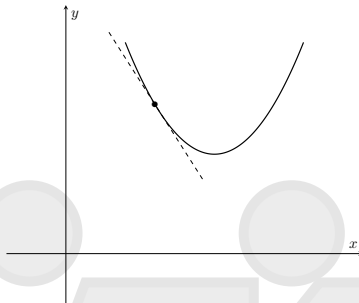


## THE BEHAVIOUR OF A FUNCTION AND ITS TANGENT:

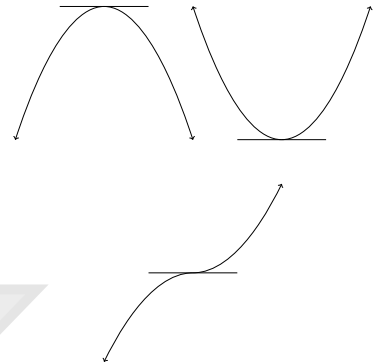
If gradient is positive  $\rightarrow f(x)$  is increasing at  $x = a$



If gradient is negative  $\rightarrow f(x)$  is decreasing at  $x = a$



If gradient is 0  $\rightarrow f(x)$  is stationary at  $x = a$



NOTE: The gradient of the tangent is the first derivative  $f'(x)$

### 5.3 WORKED EXAMPLE

For what value of  $x$  is the function increasing or decreasing?

- a)  $f(x) = 8x$
- b)  $f(x) = 3x^7$
- c)  $f(x) = x^3 + 6$
- d)  $f(x) = x^4 + 9$

### 5.4 WORKED EXAMPLE

For what value of  $x$  is the function increasing or decreasing?

- a)  $f(x) = \frac{1}{x^2 + 4}$
- b)  $f(x) = \frac{2}{x - 3}$
- c)  $f(x) = |x|$
- d)  $f(x) = \frac{x}{|x|}$