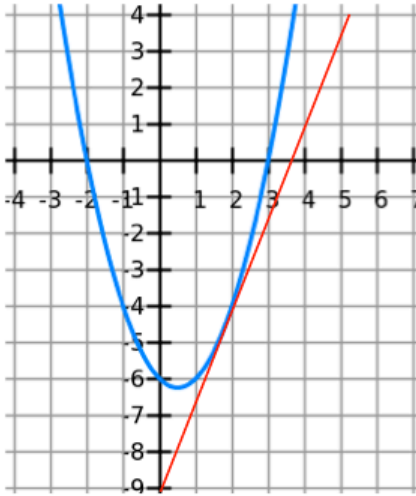


Finding the Equation of a Tangent



e.g. Find the equation of the tangent to

the curve $y = x^2 - x - 6$ at the point $(2, -4)$

Step 1: Differentiate the equation of the curve to find $\frac{dy}{dx}$

$$\frac{dy}{dx} = 2x - 1$$

Step 2: Substitute the x-coordinate into $\frac{dy}{dx}$ to find the gradient of the tangent

$$\text{when } x = 2 \quad \frac{dy}{dx} = 2 \times (2) - 1 = 3$$

Step 3: The equation of a tangent will be in the form $y = mx + c$.

Replace m with the gradient of the tangent.

$$y = 3x + c$$

Step 4: Substitute the coordinate into the equation of the tangent to find c.

$$-4 = 3 \times (2) + c$$

$$-4 = 6 + c$$

$$c = -10$$

$$\text{Answer: } y = 3x - 10$$