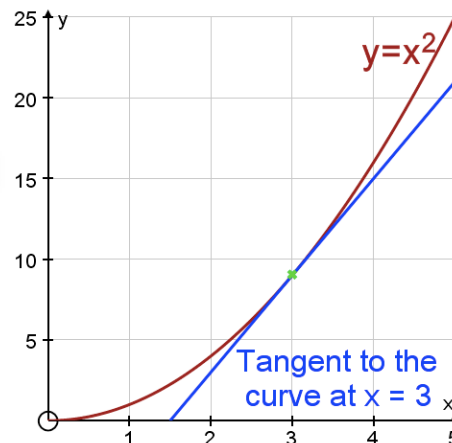


Equations of Tangents to Curves

Starter

1. **(Review of GCSE material)** Find the equation of the straight line which has a gradient of 2 and passes through the point (3, 8).
2. Find the equation of the tangent to the curve $y = x^2$ at the point where $x = 3$.



Notes

Success criteria - finding the equation of the tangent

1. Differentiate the function.
2. Find the gradient at the point given — this will be the m in the formula.
3. If necessary, find the y -value by substituting back into the original equation.
4. Use either $y = mx + c$ or the formula $y - y_1 = m(x - x_1)$ to find the equation.

E.g. 1 Find the equation of the tangent to the curve $y = x^2 - 3x + 2$ at the point where $x = 3$.

E.g. 2 Find the equation of the tangent to the curve $y = x^2 + x - 4$ which has gradient -5 .

E.g. 3 Find the value of k for which $y = 2x + k$ is a tangent to the curve $y = 2x^2 - 3$.

Hint: You can use a gradient method or a discriminant method.

Video: [Equation of tangents/normals](#)

[Solutions to Starter and E.g.s](#)

Exercise

Tangent: p274 14A Qu 1i (tangent), 2, 5, 6, 9, 11

Summary

Finding the equation of the tangent

1. Differentiate the function.
2. Find the gradient at the point given — this will be the m in the formula.
3. If necessary, find the y -value by substituting back into the original equation.
4. Use either $y = mx + c$ or the formula $y - y_1 = m(x - x_1)$ to find the equation.