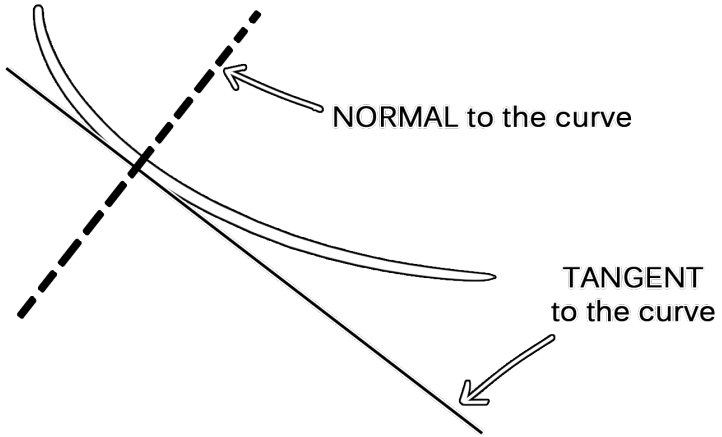
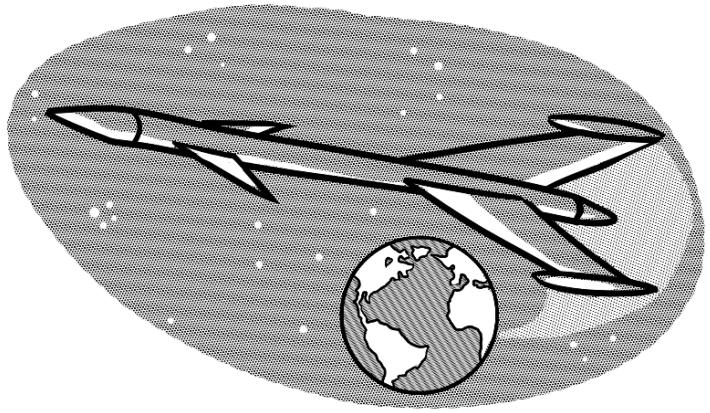
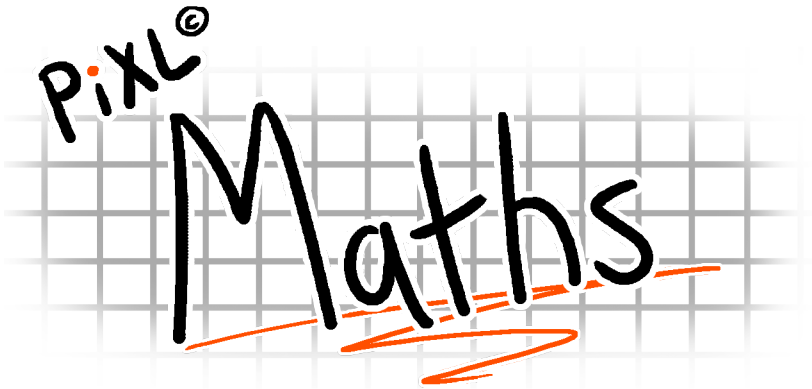
Differentiation – *A Level*







Differentiation – *A Level*

Find the gradient of $f(x) = \frac{2x-7}{x^2}$ at the point $(\frac{1}{2}, -24)$

Find the gradient of $f(x) = 8x^2 - \frac{4}{x^3}$ at the point $(1, 4)$

Find the equation of the normal to the curve $f(x) = \frac{2x^4-5x}{x^2}$ where $x = 3$

Find the equation of the normal to the curve $f(x) = \frac{3x^4-8x^3}{2x^2}$ where $x = 2$

By considering the gradient on either side of the stationary point on the curve $f(x) = x^3 - 3x^2 + 3x$, show that this point is a point of inflection.

The line L is a tangent to the curve with equation $y = 4x^2 + 1$. L cuts the y-axis at (0,-8) and has a positive gradient .
Find the equation of L in the form $y = mx + c$

Find the coordinates of the points where the gradient is zero on the curves. Establish whether these points are maximum, minimum or points of inflection.

$y = x(x^2 - 4x - 3)$ $\qquad$ $y = x^2 + \frac{54}{x}$

The normals to the curve
$2y = 3x^3 - 7x^2 + 4x$, at the points $O(0,0)$ and $A(1,0)$, meet at the point N.
a. Find the coordinates of N.
b. Calculate the area of triangle OAN