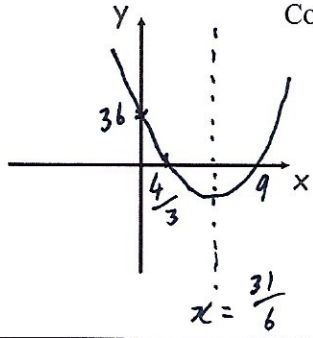


| 20th February  |   |
|--|---|
| <p>Sketch the graph of<br/> <math>y = 3x^2 - 31x + 36</math> <math>(x-9)(3x-4)</math><br/>           and work out the equation of the line of symmetry of the graph.</p> $\frac{4}{3} + 9 = \frac{31}{3}$ $\frac{31}{3} \div 2 = \frac{31}{6}$   |  <p style="text-align: right;">Corbettmaths</p> |
| <p>Rearrange</p> $y(c^3 - 8) = 4c^3 + m$ $y = \frac{4c^3 + m}{c^3 - 8}$ <p>make c the subject</p> $c^3 y - 8y = 4c^3 + m$ $c^3 y - 4c^3 = m + 8y$ $c^3(y - 4) = m + 8y$  | $c^3 = \frac{m + 8y}{y - 4}$ $c = \sqrt[3]{\frac{m + 8y}{y - 4}}$   |
| <p>Work out the rate of change of y with respect to x at the point on the curve</p> <p><math>y = x^3 - 2x^2 + x - 1</math> where <math>x = -1</math></p> $\frac{dy}{dx} = 3x^2 - 4x + 1$   | <p>when <math>x = -1</math></p> $\frac{dy}{dx} = 8$   |
| <p>The transformation matrix <math>\begin{pmatrix} 0 &amp; 1 \\ 1 &amp; 0 \end{pmatrix}</math> maps point P to point Q.</p> <p>The transformation matrix <math>\begin{pmatrix} -3 &amp; 0 \\ 0 &amp; -3 \end{pmatrix}</math> maps point Q to point R.</p> <p>Point R is <math>(-6, -15)</math>.</p> <p>Work out the coordinates of point P.</p> $\begin{pmatrix} -3 & 0 \\ 0 & -3 \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -6 \\ -15 \end{pmatrix}$ $\begin{pmatrix} 0 & -3 \\ -3 & 0 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -6 \\ -15 \end{pmatrix}$ | $-3y = -6$ $y = 2$ $-3x = -15$ $x = 5$ $(5, 2)$   |