7th March

Corbettmaths

$f(x) = 2x^4 + 1$ $g(x) = \sqrt{x-2}$ Find and simplify $fg(x)$	$fg(x) = 2[(x-2)^{\frac{1}{2}}]^4 + 1$ $= 2(x-2)^2 + 1$
Find where the matrix $\begin{pmatrix} 8 & -1 \\ -7 & 0 \end{pmatrix}$ maps the point $(-4, 1)$ $\begin{pmatrix} 8 & -1 \\ -7 & 0 \end{pmatrix}\begin{pmatrix} -4 \\ 1 \end{pmatrix} = \begin{pmatrix} -33 \\ 28 \end{pmatrix}$	$(8 \times -4) + (-1 \times 1) = -33$ $(-7 \times -4) + (0 \times 1) = 28$ $(-33, 28)$
Solve $x^{\frac{2}{3}} + 2x^{-\frac{1}{3}} = 3x^{\frac{5}{3}}$ $\times x^{\frac{1}{3}}$ $x + 2 = 3x^2$ $0 = 3x^2 - x - 2$ $0 = (3x+2)(x-1)$	$x = 1$ or $x = -\frac{2}{3}$
The equation of a curve is $y = x^3 - \frac{1}{2}x^2 + ax + 1$ where a is a constant The curve has a maximum point at $\left(-\frac{2}{3}, \frac{49}{27}\right)$ The curve has a minimum point at $(1, -0.5)$ Work out the value of a	$(1, -0.5)$ $-\frac{1}{2} = 1 - \frac{1}{2} + a + 1$ $a = -2$ or $\frac{dy}{dx} = 3x^2 - x + a$ $\frac{dy}{dx} = 0$ at $(1, -0.5)$ $0 = 3 - 1 + a$ $a = -2$

