2nd October

Corbettmaths

$f(x) = 2x - 7$ for all values of x

Solve $f(x^2) = 4x - 1$

$2x^2 - 7 = 4x - 1$
$2x^2 - 4x - 6 = 0$
$x^2 - 2x - 3 = 0$
$(x-3)(x+1) = 0$
$x = -1, 3$

AB is a diameter of a circle C.
Q is the centre of the circle
A has coordinates (–2, 12) and B has coordinates (8, 2).

Find the equation of C

Q (3, 7)
$QA = \sqrt{5^2 + 5^2} = \sqrt{50}$
$(x-3)^2 + (y-7)^2 = 50$

Find the equation of the tangent to C at the point A.

$m_{QA} = -\frac{5}{5} = -1$
$m_{\perp} = 1$
Tgt is $y - 12 = x + 2$
$y = x + 14$

Find the values of x for which $y = 10 + 2x^2 - 4x^3$ is an increasing function.

$\frac{dy}{dx} = 4x - 12x^2$

Incr $\Rightarrow 4x - 12x^2 > 0$
$4x(1 - 3x) > 0$
$0 < x < \frac{1}{3}$.

Describe fully the **single** transformation represented by $\begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$

$(1, 0) \rightarrow (-1, 0)$
$(0, 1) \rightarrow (0, -1)$

Rotation 180° about (0, 0).