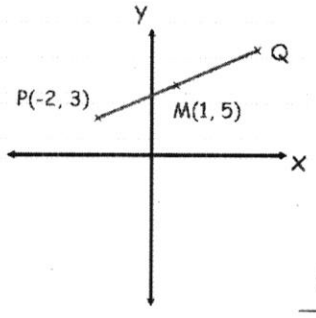
Name: _____ 5-a-day Further Maths

22nd September

Corbettmaths

M is the midpoint of PQ

Find the coordinates of Q



Q (4, 7)

$f(x) = \frac{8}{x+4}$ for all positive values of x

Work out $f(x-4) + f(2x)$

Give your answer as a single fraction in its simplest form.

$f(x-4) + f(2x)$

$= \frac{8}{x} + \frac{8}{2x+4} = \frac{8}{x} + \frac{4}{x+2}$

$= \frac{8(x+2)+4x}{x(x+2)}$

$= \frac{12x+16}{x(x+2)} = \frac{4(3x+4)}{x(x+2)}$

Write $8x^2 - 56x + 3$ in the form $a(bx+c)^2 + d$

$8x^2 - 56x + 3$

$= 2[4x^2 - 28x] + 3$

$= 2[(2x-7)^2 - 49] + 3$

$= 2(2x-7)^2 - 95$

Find the values of x for which $y = 72x - 2x^3$ is an increasing function

$\frac{dy}{dx} = 72 - 6x^2$

Incr $\Rightarrow 72 - 6x^2 > 0$

$\Rightarrow 6x^2 < 72$

$\Rightarrow x^2 < 12$

$\Rightarrow -\sqrt{12} < x < \sqrt{12}$

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

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

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

Rotation about O

90° clockwise.