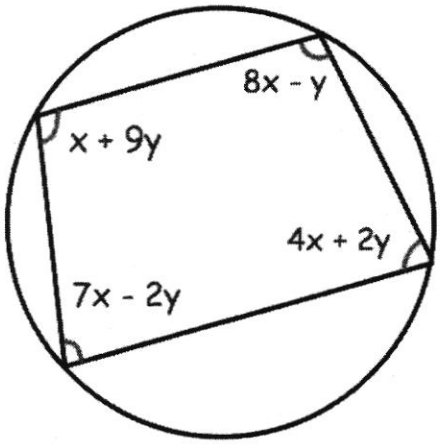
Name: _____ 5-a-day Further Maths

8th June

Corbettmaths

Shown is a cyclic quadrilateral



Find the values of x and y

$5x + 11y = 180$ (1)
$15x - 3y = 180$ (2)
$15x + 33y = 540$ (1)×3

$36y = 360$
$\Rightarrow y = 10$
$x = 14$

$f(x) = 3x^3 - 11x^2 + 8x + 4$

Use factor theorem to show that (3x + 1) is a factor of f(x)

$f(-\frac{1}{3}) = -\frac{1}{9} - \frac{11}{9} - \frac{8}{3} + 4 = 0$
$\Rightarrow$ 3x+1 factor.

Factorise f(x) fully

$3x^3 - 11x^2 + 8x + 4$
$= (3x+1)(x^2 - 4x + 4)$
$= (3x+1)(x-2)^2$

$y = (x^2 + 5)(1 - x)$

Work out the value $\frac{d^2y}{dx^2}$ when $x = -1$

$= -x^3 + x^2 - 5x + 5$
$\frac{dy}{dx} = -3x^2 + 2x - 5$
$\frac{d^2y}{dx^2} = -6x + 2$
$= 8$ when $x = -1$.