11th May

Corbettmaths

A circle, centre (3, –7) has an area of 64π

$r = 8$

Work out the equation of the circle.

$(x-3)^2 + (x+7)^2 = 64$

or

$(x-3)^2 + (x+7)^2 = 8^2$

The first term of a sequence is $5 - 2a$

The term-to-term rule of the sequence is subtract 4a and then multiply by 2

The fourth term of the sequence is 58

Work out the second term of the sequence.

1st : $5-2a$

2nd : $10-12a$

3rd : $20-32a$

4th : $40-72a$

$40-72a = 58$

$-18 = 72a$

$a = -\frac{1}{4}$

$10-12(-\frac{1}{4}) = \boxed{13}$

Solve the equation

$$\frac{3}{2x-1} = 1 + \frac{4}{3x-1}$$

$\frac{3}{2x-1} - \frac{4}{3x-1} = 1$

$\frac{9x-3-4(2x-1)}{(2x-1)(3x-1)} = 1$

$\frac{9x-3-8x+4}{(2x-1)(3x-1)} = 1$

$x+1 = 6x^2-5x+1$

$6x^2-6x = 0$

$6x(x-1) = 0$

$x = 0$ or $x = 1$

Work out the equation of the normal to the curve $y = x^3 + 2x - 5$ at the point where $x = -2$

$y = -8-4-5 = -17$

$\frac{dy}{dx} = 3x^2 + 2$

$\frac{dy}{dx} = 14$

$y = -\frac{1}{14}x + c$

$-17 = \frac{1}{7} + c$

$c = -\frac{120}{7}$

$\boxed{y = -\frac{1}{14}x - \frac{120}{7}}$

$y = \frac{-1}{14}x - \frac{120}{7}$