

**12th March**

Corbettmaths

The equation  $x^2 + 12kx + k = 0$  has equal roots.  $k$  is a non zero constant.

Find  $k$

$$\int 4x^5 + 2x - \frac{1}{2} dx$$

A sequence  $a_1, a_2, a_3, \dots$  is defined as

$$a_1 = k$$

$$a_{n+1} = 3a_n + 4$$

Find an expression for  $a_3$  in terms of  $k$ .

Find in terms of  $k$

$$\sum_{r=1}^4 a_r$$

Find the equation of the tangent to the curve

$$y = \frac{(x+2)(x-5)}{x}$$

where  $x = 3$