

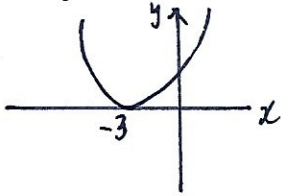
2nd March



Corbettmaths

Factorise $12x^2 + 5x - 3$

$$(4x+3)(3x-1)$$

For what values of x is $y = (x+3)^2$ an increasing function?

$$x > -3$$

Use Pascal's Triangle to work out the coefficient of x^2 in the expansion of $(2x-11)^4$

$$6 \times (2x)^2 \times (-11)^2$$

$$2904x^2$$

$$\boxed{2904}$$

$$\begin{array}{cccc} & & 1 & & \\ & & & 1 & \\ & 1 & & 2 & & 1 \\ & & 1 & & 3 & & 3 & & 1 \\ & & & 1 & & 4 & & 6 & & 4 & & 1 \end{array}$$

Show that $(x+3)$ is a factor of $x^3 + 3x^2 - 49x - 147$

$$\text{let } f(x) = x^3 + 3x^2 - 49x - 147$$

$$f(-3) = -27 + 27 + 147 - 147$$

$$f(-3) = 0$$

$$(x+3)(x^2 + ax + b) = x^3 + 3x^2 - 49x - 147$$

$$b = -49$$

$$(x+3)(x^2 + ax - 49)$$

$$3ax - 49x = -49x$$

$$a = 0$$

$$(x+3)(x^2 - 49)$$

$$(x+3)(x-7)(x+7)$$

Hence, or otherwise, find all the solutions of

$$x^3 + 3x^2 - 49x - 147 = 0$$