

11th December

Corbettmaths

The points D and E have coordinates (-4, 13) and (6, 2).

Given DE is the diameter of the circle C.

Calculate the exact length of the diameter DE.

$$DE = \sqrt{10^2 + 11^2}$$

$$= \sqrt{221}$$

Find the equation of C

Centre is $(1, \frac{15}{2})$ $r = \frac{\sqrt{221}}{2}$

$$(x-1)^2 + (y - \frac{15}{2})^2 = \frac{221}{4}$$

Solve the simultaneous equations

$$y - x + 2z = 2.1 \quad (1)$$

$$3x - 2z - y + 2.5 = 0 \quad (2)$$

$$8z + 10y + 5x = 4.5 \quad (3)$$

$$(1)+(2): 2x = -0.4 \Rightarrow x = -0.2$$

$$4x(2)+(3): 17x + 6y = -5.5$$

$$-3.4 + 6y = -5.5$$

$$6y = -2.1$$

$$y = -0.35$$

$$(3): -1 - 3.5 + 8z = 4.5$$

$$8z = 9$$

$$z = 1.125$$

The coefficient of the x^2 in the expansion of $(2x + a)^4$ is 1944.

Work out the possible values of a

Term in x^2 is $6(2x)^2 a^2$

$$\Rightarrow 24a^2 = 1944$$

$$a^2 = 81$$

$$a = \pm 9$$