

14th October



Corbettmaths

Work out

$$\left(6^{\frac{1}{2}} + 6^{\frac{3}{2}}\right)^2$$

$$\begin{aligned} &= \left(6^{\frac{1}{2}}(1+6)\right)^2 \\ &= 6 \times 7^2 \\ &= \underline{294} \end{aligned}$$

The circle C has equation

$$(x+2)^2 + (y-1)^2 = 25$$

Find where C crosses the x-axis.

$$\begin{aligned} y &= 0 \\ \Rightarrow (x+2)^2 + 1 &= 25 \\ \Rightarrow (x+2)^2 &= 24 \\ \Rightarrow x+2 &= \pm 2\sqrt{6} \\ \Rightarrow \underline{x = -2 \pm 2\sqrt{6}} \end{aligned}$$

Express

$$\frac{9\sqrt{2} + 5}{4 - 3\sqrt{2}}$$

in the form $a\sqrt{2} + b$

$$\begin{aligned} &\frac{9\sqrt{2} + 5}{4 - 3\sqrt{2}} \times \frac{4 + 3\sqrt{2}}{4 + 3\sqrt{2}} \\ &= \frac{51\sqrt{2} + 74}{16 - 18} \\ &= \underline{-\frac{51\sqrt{2}}{2} - 37} \end{aligned}$$

Solve $x^3 - 13x^2 + 46x - 48 = 0$

$$f(x) = 0$$

$$\begin{aligned} f(2) &= 8 - 52 + 92 - 48 = 0 \\ f(x) &= (x-2)(x^2 - 11x + 24) \\ &= (x-2)(x-3)(x-8) \\ &\underline{x = 2, 3, 8} \end{aligned}$$