

19th March



Corbettmaths

Work out the value of y such that

$$\frac{\sqrt{15} \times \sqrt{y}}{\sqrt{5}} = 3\sqrt{11}$$

$$\frac{\sqrt{15y}}{\sqrt{5}} = \sqrt{9} \times \sqrt{11}$$

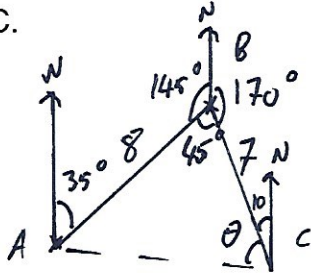
$$\sqrt{3y} = \sqrt{99}$$

$$3y = 99$$

$$y = 33$$

A ship sails from point A on a bearing of 035° for 8 ~~miles~~ km to point B.
At B the ship alters course and sails for 7km on a bearing of 170° to point C.

Find the distance AC and the bearing of A from C.



$$AC^2 = 8^2 + 7^2 - 2 \times 8 \times 7 \times \cos 45$$

$$AC^2 = 33.804\dots$$

$$AC = 5.814\dots \text{ km}$$

$$\frac{\sin \theta}{8} = \frac{\sin 45}{5.814\dots}$$

$$\theta = 76.64\dots$$

$$360 - 10 - 76.64\dots$$

$$273.36^\circ$$

Find where the matrix $\begin{pmatrix} -2 & 1 \\ -3 & 4 \end{pmatrix}$
maps the point $(2, -1)$

$$\begin{pmatrix} -2 & 1 \\ -3 & 4 \end{pmatrix} \begin{pmatrix} 2 \\ -1 \end{pmatrix} = \begin{pmatrix} -5 \\ -10 \end{pmatrix}$$

$$(-5, -10)$$

$$x^{-3} = \frac{8}{27} \quad \text{and} \quad y^{\frac{3}{2}} = 64$$

where $x > 0$ and $y > 0$ Find the value of $\frac{x}{y}$

$$x^3 = \frac{27}{8} \quad x = \frac{3}{2}$$

$$y = 64^{\frac{2}{3}} \quad y = 16$$

$$\frac{x}{y} = \frac{3}{32}$$