15th October **Higher Plus 5-a-day**

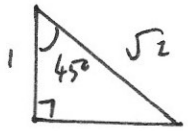
Corbettmaths

Conor says

$cos(45°) = \frac{1}{\sqrt{2}}$

Is he correct?

yes.



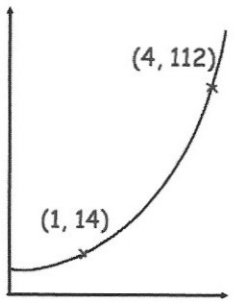
$\cos 45 = \frac{1}{\sqrt{2}}$

$= \frac{\sqrt{2}}{2}$

The sketch shows a curve with equation $y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (1, 14) and (4, 112)

Calculate the value of a and b



$y = ab^x$

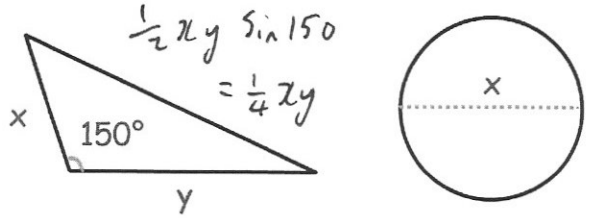
$14 = ab$ ①

$112 = ab^4$ ②

② ÷ ①

$b^3 = 8$

$b = 2$ $a = 7$



$\frac{1}{2} xy \sin 150$

$= \frac{1}{4} xy$

The triangle and circle have the same area.

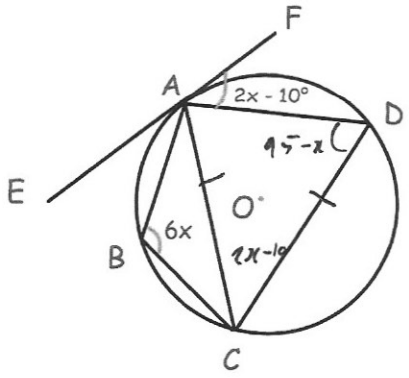
Express y in terms of x.

$\pi (\frac{1}{2} x)^2 = \frac{1}{4} x^2 \pi$

$\frac{1}{4} xy = \frac{1}{4} x^2 \pi$

$xy = x^2 \pi$

$y = x\pi$ $y = \pi x$



EF is a tangent to a circle, centre O.

$\angle DAF = 2x - 10°$

$\angle ABC = 6x$

AC = CD

Find the size of angle $\angle DAF$

$\frac{180 - (2x - 10)}{2} = \frac{190 - 2x}{2}$

$= 95 - x$

$(95 - x) + 6x = 180$

$95 + 5x = 180$

$5x = 85$

$x = 17$

$2 \times 17 - 10 = 24°$