27th February **Higher Plus 5-a-day**

Corbettmaths

Simplify fully

$$\frac{3x}{x^2+3x+2}+\frac{3}{x+1}$$

$\frac{3x}{(x+1)(x+2)} + \frac{3}{x+1}$

$\frac{3x + 3(x+2)}{(x+1)(x+2)}$

$\frac{3x + 3x + 6}{(x+1)(x+2)} = \frac{6x+6}{(x+1)(x+2)} = \frac{6(x+1)}{(x+1)(x+2)}$

$\frac{6}{x+2}$

a is directly proportional to $\sqrt{c}$
w is inversely proportional to a^3.

When c = 49, a = 35
When a = 2, w = 16.

Find the value of w when c = 4.

$a \propto \sqrt{c}$

$a = k\sqrt{c}$

$35 = k \times \sqrt{49}$

$35 = 7k$

$k = 5$

$a = 5\sqrt{c}$

$a = 5 \times 2 = 10$

$w \propto \frac{1}{a^3}$

$w = \frac{k}{a^3}$

$16 = \frac{k}{8}$

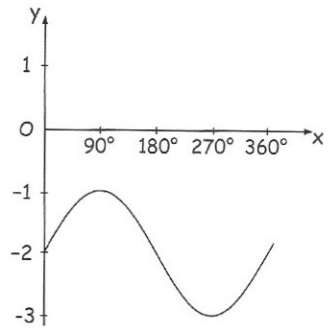
$k = 128$

$w = \frac{128}{a^3}$

$w = \frac{128}{10^3}$

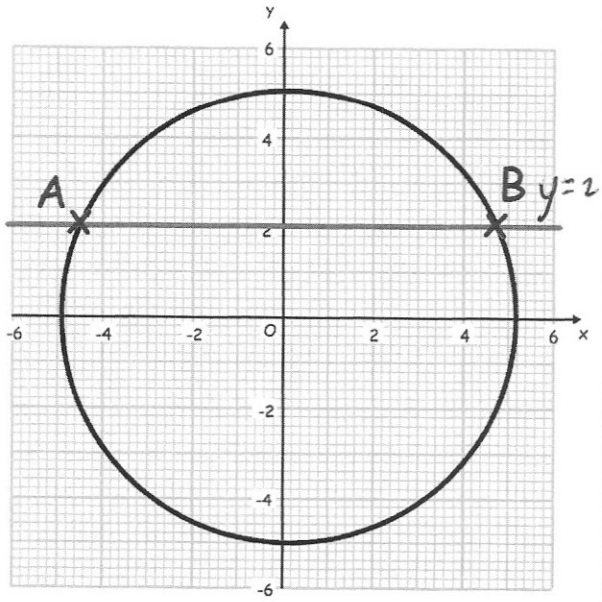
$= \frac{128}{1000}$

$= 0.128$



Write down the equation of the curve shown.

$y = \sin(x) - 2$



A circle has equation $x^2 + y^2 = 25$
A straight line, y = 2, meets the circle at the points A and B.

Find the coordinates of the points A and B. Give your answers in surd form.

$x^2 + 2^2 = 25$

$x^2 + 4 = 25$

$x^2 = 21$

$x = \pm\sqrt{21}$

$(\sqrt{21}, 2)$ & $(-\sqrt{21}, 2)$