

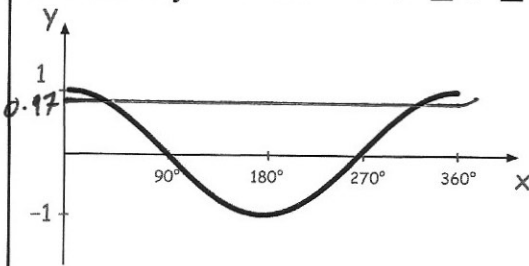
3rd July

Higher Plus 5-a-day



Corbettmaths

Shown is  $y = \cos x$  for  $0^\circ \leq x \leq 360^\circ$

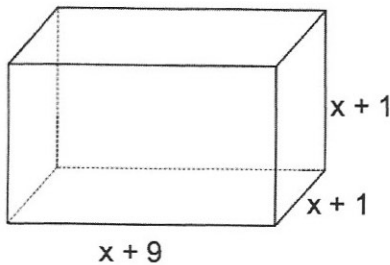


One solution of  $\cos x = 0.97$  is

$x = 14^\circ$

Find another solution to  $\cos x = 0.97$

$360 - 14 = 346^\circ$



Form an expression for the volume of the cuboid.

Expand and simplify the expression.

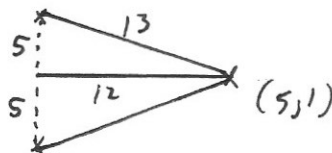
$x^3 + 9x^2 + 2x^2 + 18x + x + 9$

$x^3 + 11x^2 + 19x + 9$

$(x+1)(x+1)(x+9) = (x^2 + 2x + 1)(x+9)$

The distance between  $(-7, a)$  and  $(5, 1)$  is 13 units. *(5, 12, 13 triangle)*

Find two possible values for  $a$ .



$h^2 + 12^2 = 13^2$

$h^2 = 169 - 144$

$h^2 = 25$

$h = 5$

$1 + 5 = 6$

$1 - 5 = -4$

$a = -4 \text{ or } 6$

The numbers  $m$  and  $n$  are irrational and are not the same.

$m + n$  is rational

Write down possible values for  $m$  and  $n$

$m = 8 + \sqrt{2}$

$n = 5 - \sqrt{2}$

$m + n = 13$

The ratio of Isaac's age to Max's age is  $x:y$

$7(x-5) = y-5$

$7x - 35 = y - 5$

Five years ago, the ratio of their ages was 1:7

$2x - 30 = y$  — (1)

In six years time, the ratio of their ages will be 3:10

$10(x+6) = 3(y+6)$

$10x + 60 = 3y + 18$

Express  $x:y$  in its lowest terms

Substitute (1) into (2)

$10x + 42 = 3(7x - 30)$

$10x + 42 = 21x - 90$

$132 = 11x$

$x = 12$

$y = 54$

$12:54$

2:9