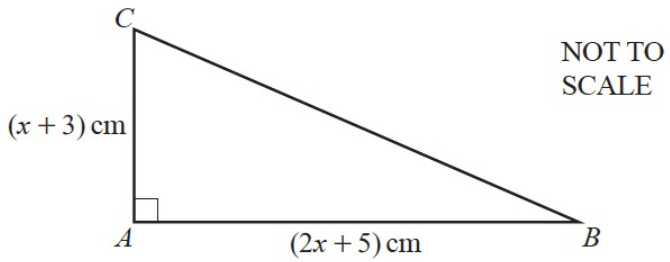
Problem 0580/42/M/J/23 Q2



The diagram shows a right-angled triangle ABC.

(a) (i) The area of the triangle is $60\,\text{cm}^2$.

Show that $2x^2 + 11x - 105 = 0$.

$\frac{1}{2} \times (x+3)(2x+5) = 60$

$2x^2 + 11x - 105 = 0$

[3]

(ii) Solve by factorisation.

$2x^2 + 11x - 105 = 0$

$2x^2 + 21x - 10x - 105 = 0$

$x(2x+21) - 5(2x+21)$

$(x-5)(2x+21)$

$x =$ 5 or $x =$ $-21/2$ [3]

(iii) Calculate angle ACB.

$\tan ACB = \frac{2x+5}{x+3}$

$x = 5$

$\tan ACB = \frac{15}{8}$

$ACB = \tan^{-1}\frac{15}{8}$

620

[3]