

25th January



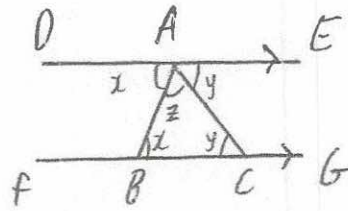
CorbettmOths

Prove the angles in a triangle add up to 180°.

Hint: consider parallel lines.

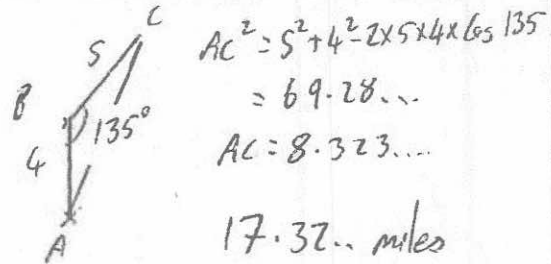
$\angle OAB = \angle ABC$ (alternate)
 $\angle ACB = \angle EAG$ (alternate)
 $\angle BAC$ is shared

since the angles on a straight line = 180°
 $x + y + z = 180^\circ$



A boat sails 4 miles North from A to B.
 Then the boat sails 5 miles North-East from B to C.
 The boat then sails directly back to C.

How far does the boat sail in total?



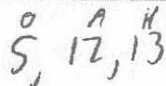
Rationalise the denominator of

$$\frac{2 + \sqrt{3}}{\sqrt{5} - 1} \times \frac{(\sqrt{5} + 1)}{(\sqrt{5} + 1)}$$

$$\frac{2\sqrt{5} + 2 + \sqrt{15} + \sqrt{3}}{5 + \sqrt{5} - \sqrt{5} - 1}$$

$$\frac{2\sqrt{5} + 2 + \sqrt{15} + \sqrt{3}}{4}$$

x is an obtuse angle.



Find $\cos(x)$

Given

$$\sin(x) = \frac{5}{13}$$

$$\cos(x) = \frac{-12}{13}$$

Expand and simplify

$$(1 + \sqrt{2})(1 + \sqrt{3})(2 - \sqrt{3})$$

$$(1 + \sqrt{3} + \sqrt{2} + \sqrt{6})(2 - \sqrt{3})$$

$$2 - \sqrt{3} + 2\sqrt{3} - 3 + 2\sqrt{2} - \sqrt{6} + 2\sqrt{6} - \sqrt{18}$$

$$= -1 + \sqrt{3} + 2\sqrt{2} + \sqrt{6} - \sqrt{18}$$

$\sqrt{9} \times \sqrt{2}$
3√2

$$= -1 + \sqrt{3} - \sqrt{2} + \sqrt{6}$$