



Prove that the angles in a triangle add up to  $180^\circ$ .  $AC \parallel DE$  are parallel

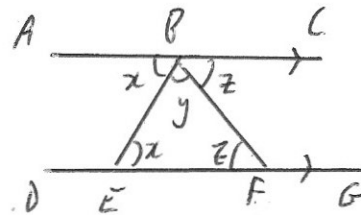
$\angle ABE = \angle BEF$  (alternate)

Hint: consider parallel lines.

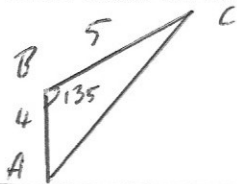
$\angle CBF = \angle BFE$  (alternate)

$ABC$  is a straight line so

$x + y + z = 180^\circ \therefore$  angles in  $\triangle BEF$  add to  $180^\circ$



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 A.



How far does the boat sail in total?

$AC^2 = 5^2 + 4^2 - 2 \times 5 \times 4 \times \cos 135$

$AC = 8.323 \dots$

total : 17.32... miles

Rationalise the denominator of

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

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

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$5 - 1$

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

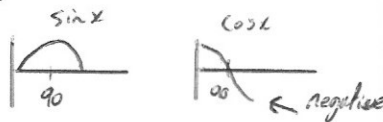
4

$x$  is an obtuse angle.

0 A H  
5, 12, 13

Given

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



Find  $\cos(x)$

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

Expand and simplify

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

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

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

$\uparrow$   
 $3\sqrt{2}$

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

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