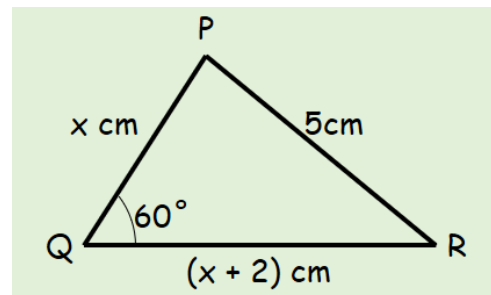# 9A The Cosine Rule

1. A triangle has sides of 4cm, 5cm and 6cm respectively. Find the size of the smallest angle
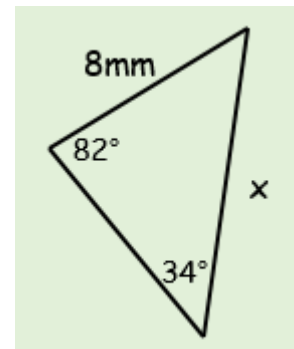
2. Coastguard station B is 8km on a bearing of 060° from coastguard station A. A ship C is 4.8km, on a bearing of 018°, away from A.

3. In the triangle below, PQ = xcm, QR = (x + 2)cm, RP = 5cm and angle PQR = 60°. Find the value of x.
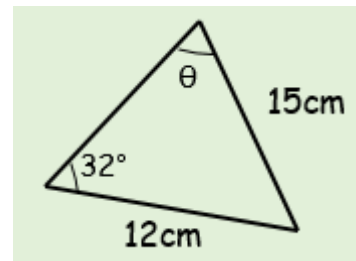
9B The Sine Rule

1. Calculate the labelled side in the triangle below:

8mm

82°

x

34°

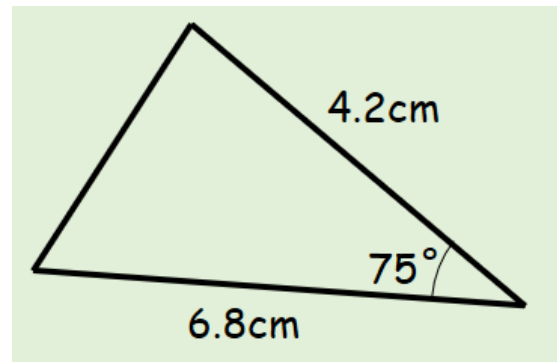2. Calculate the labelled angle in the triangle to the right:

θ

15cm

32°

12cm

9C The Sine Rule (Ambiguous Case)

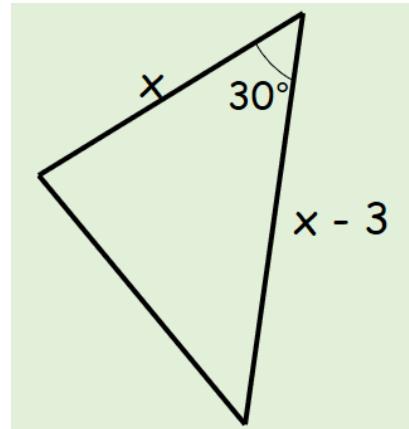1. In triangle ABC, AB = 4cm, BC = 3cm and angle BAC = 44°. Work out the possible values of ACB.

9D Trigonometric Area Formula

1. Calculate the area of the triangle shown below

2. The area of the triangle to the right is 60cm^2.
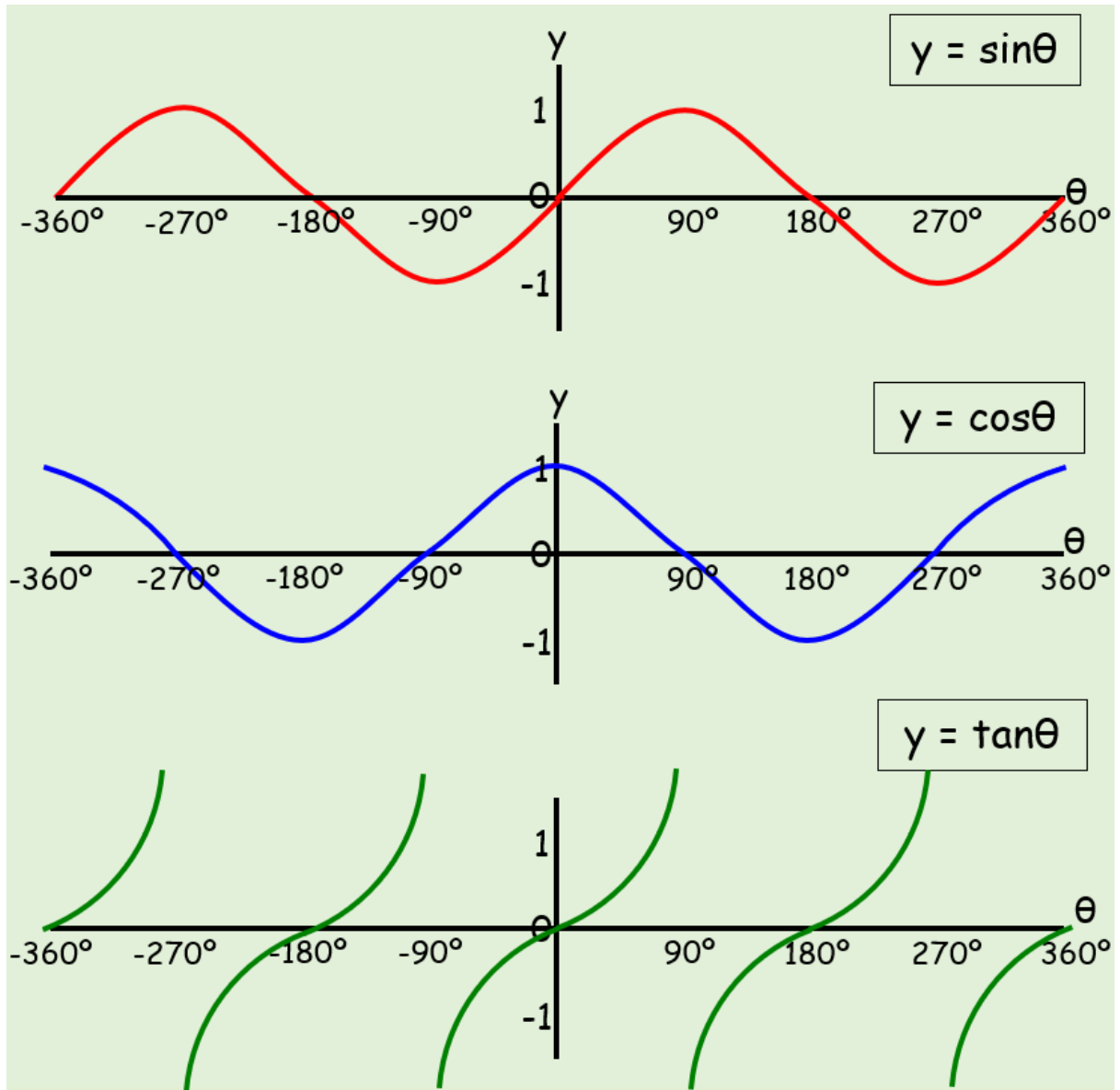
   Show that $x^2 - 3x - 240 = 0$

9E Problem Solving

1. The diagram shows the locations of four mobile phone masts in a field. $BC = 75m$, $CD = 80m$, angle $BCD = 55°$ and angle $ADC = 140°$
   The masts must be at least 70m apart so that they do not interfere with each other. Given that A is the minimum distance from D, find the distance AB.
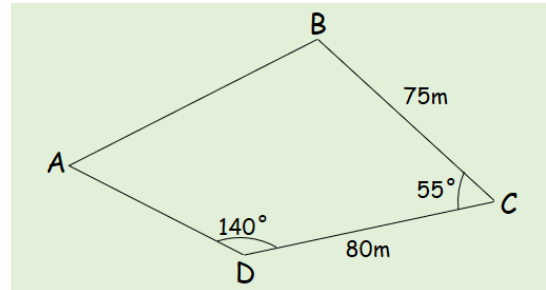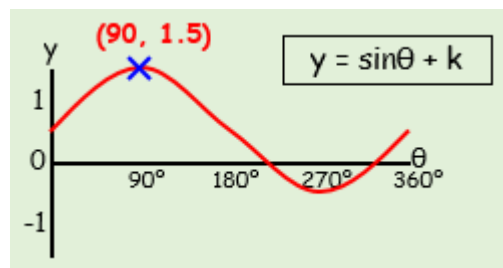
9F Trigonometric Graphs

9G Graphical Transformations of Trigonometric Graphs
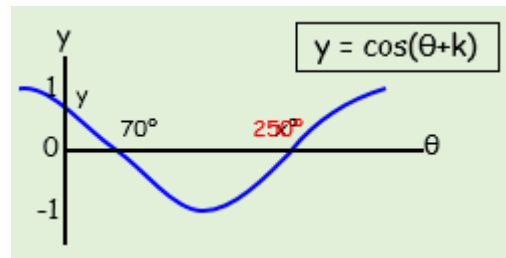
1. The graph shows the Function:

   f(x) = Sinθ + k

a) Write down the value of k

b) What is the smallest positive value of θ that gives a minimum point?

c) What is the value of Sinθ at this point?

2. The graph shows the Function:

   f(x) = Cos(θ + k)

a) Write down the value of k

b) What is the value of θ at x?

c) What are the coordinates of the minimum?

d) What is the value of Cosθ at y?