Answers - Sine Rule, Cosine Rule and Area Rule - 2

1.

a $x = 43.2, y = 5.02$ **b** $x = 101, y = 15.0$
c $x = 6.58, y = 32.1$ **d** $x = 54.6, y = 10.3$
e $x = 21.8, y = 3.01$ **f** $x = 45.9, y = 3.87$

2.

Using the sine rule, $x = \dfrac{4\sqrt{2}}{2+\sqrt{2}}$; rationalising

$x = \dfrac{4\sqrt{2}(2-\sqrt{2})}{2} = 4\sqrt{2} - 4 = 4(\sqrt{2}-1).$

3.

a 5.44 **b** 7.95 **c** 36.8

4.

a $AB + BC > AC \Rightarrow x + 6 > 7 \Rightarrow x > 1;$
$AC + AB > BC \Rightarrow 11 > x + 2 \Rightarrow x < 9$
b **i** $x = 6.08$ from $x^2 = 37$,
ii $x = 7.23$ from
$x^2 - 4(\sqrt{2}-1)x - (29 + 8\sqrt{2}) = 0$

5.

$x = 4$

6.

$AC = 1.93$ cm

7.

b $\frac{1}{2}$

8.

$4\sqrt{10}$

9.

$AC = 1\frac{2}{3}$ cm and $BC = 6\frac{1}{3}$ cm

10.

a 36.1 cm^2 **b** 12.0 cm^2
