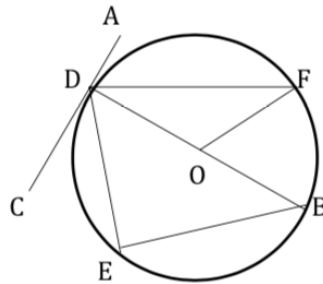1. In the diagram below:

O is the centre of the circle
B,E,D and F lie on the circumference
AC is a tangent to the circle at D.



a) Name 3 right angles. Explain.

b) Name 2 equal angles. Explain.

c)  If angle BOF = 62°, calculate the size of:
   i) angle OFD
   ii) angle ADF.

2.  Two functions have equations $f(x) = 2x^2 - 3x - 1$ and $g(x) = x^2 + x + 2$

   Solve the equation
$$f(x) = g(x)$$

   correct to one decimal place.

3a  Find the roots of the equation $f(x) = x^2 - 6x - 16$
3b.  State the coordinates of the turning point and the equation of its axis of symmetry.
3c.  Make a neat sketch of the graph of $y = f(x)$, indicating where it crosses both axes.

4.  Express the fraction below with a rational denominator in its simplest form.

$$\frac{9}{\sqrt{12}}$$

5.  Calculate the height, $h$ metres, of the triangle in the diagram below.
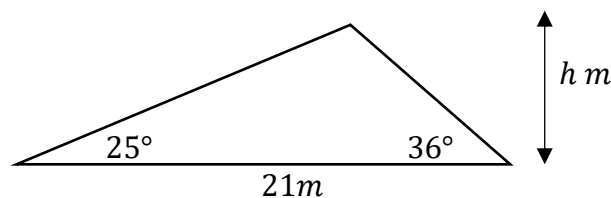


6.  A rectangle has length $2\sqrt{6}\ cm$ and breadth $3\sqrt{2}\ cm$.
   Find the exact value of its area.
   Give your answer in the form $k\sqrt{a}$, in its simplest form, and state clearly the values
   of $k$ and $a$.

7. Express $2x^2(3x^3 - 5x^{-2})$ without brackets in its simplest form.