

**Question 1 (6 Marks)**

There are only green pens and blue pens in a box.

There are three more blue pens than green pens in the box.

There are more than 12 pens in the box.

Simon is going to take at random two pens from the box.

The probability that Simon will take two pens of the same colour is  $\frac{27}{55}$

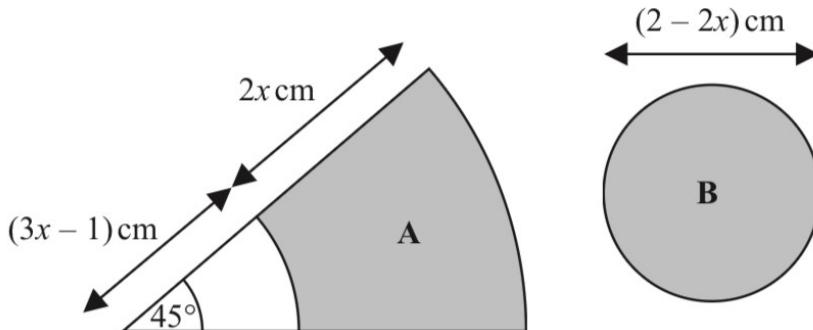
Work out the number of green pens in the box.

**Question 2 (5 Marks)**

The diagram shows two shaded shapes, **A** and **B**.

Shape **A** is formed by removing a sector of a circle with radius  $(3x - 1)$  cm from a sector of the circle with radius  $(5x - 1)$  cm.

Shape **B** is a circle of diameter  $(2 - 2x)$  cm.



The area of shape **A** is equal to the area of shape **B**.

Find the value of  $x$ .

You must show all your working.

**Question 3 (4 Marks)**

Find the coordinates of the turning point on the curve with equation  $y = 9 + 18x - 3x^2$   
You must show all your working.

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**(Total 15 Marks)**