

18 Solve the equation

$$\frac{5}{x+2} + \frac{3}{x^2+2x} = 2$$

Show clear algebraic working.

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.....  
(Total for Question 18 is 5 marks)



19 (a) Simplify  $8^2 \times \sqrt[3]{4^6}$   
Give your answer in the form  $2^a$  where  $a$  is an integer.  
Show each stage of your working clearly.

.....  
(3)

Given that  $n^{\left(-\frac{4}{5}\right)} = \left(\frac{1}{2}\right)^4$  where  $n > 0$

(b) find the value of  $n$ .

$n =$  .....  
(4)

(Total for Question 19 is 7 marks)



20  $A$ ,  $B$  and  $C$  are points on a circle with centre  $O$ .

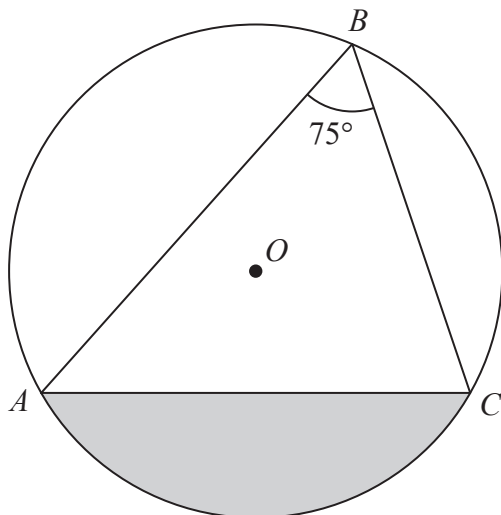


Diagram NOT accurately drawn

Angle  $ABC = 75^\circ$

The area of the shaded segment is  $200 \text{ cm}^2$

Calculate the radius of the circle.

Give your answer correct to 3 significant figures.

..... cm

(Total for Question 20 is 5 marks)

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21 A bag contains  $n$  beads.  
6 of the beads are red and the rest are blue.

Ravi is going to take at random 2 beads from the bag.

The probability that the 2 beads will be of the same colour is  $\frac{9}{17}$

Using algebra, and showing each stage of your working, calculate the value of  $n$ .

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$$n = \dots\dots\dots$$

(Total for Question 21 is 6 marks)

Turn over for Question 22



- 22  $ABC$  is an isosceles triangle in a horizontal plane.  
The point  $T$  is vertically above  $B$ .

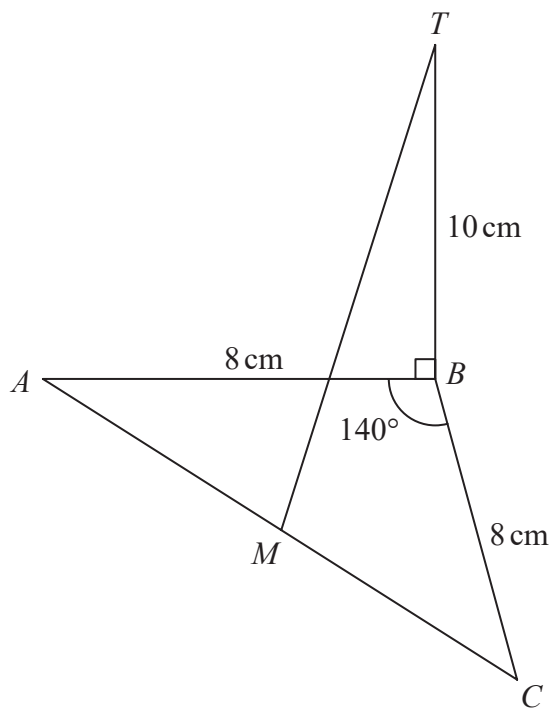


Diagram NOT  
accurately drawn

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Angle  $ABC = 140^\circ$   
 $AB = BC = 8 \text{ cm}$   
 $TB = 10 \text{ cm}$   
 $M$  is the midpoint of  $AC$ .

Calculate the size of the angle between  $MT$  and the horizontal plane  $ABC$ .  
 Give your answer correct to one decimal place.



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(Total for Question 22 is 4 marks)

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**TOTAL FOR PAPER IS 100 MARKS**

