

SECTION A(1) (33 marks)

Answer ALL questions in this section and write your answers in the spaces provided.

1. Simplify $\frac{(a^{-3})^2}{a}$ and express your answer with positive indices. (3 marks)

2. Make x the subject of the formula $a = b + \frac{c}{x}$. (3 marks)

3. Find the range of values of x which satisfy both $3x - 4 > 2(x - 1)$ and $x < 6$. (3 marks)

4. In Figure 1, find the bearing of B from A . (3 marks)

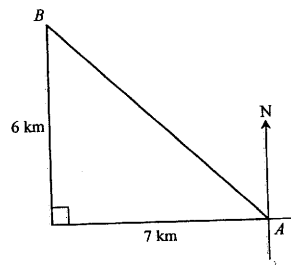


Figure 1

5. In Figure 2, A, B, C, D are points on a circle and AC is a diameter. Find x and y . (4 marks)

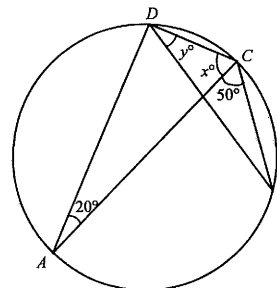


Figure 2

6. y varies partly as x and partly as x^2 . When $x = 2$, $y = 20$ and when $x = 3$, $y = 39$. Express y in terms of x . (4 marks)

16. (a) In Figure 9.1, ABC is a triangle right-angled at B . D is a point on AB . A circle is drawn with DB as a diameter. The line through D and parallel to AC cuts the circle at E . CE is produced to cut the circle at F .

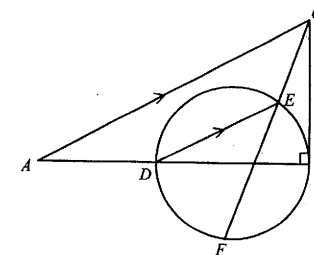


Figure 9.1

- (i) Prove that A, F, B and C are concyclic.
- (ii) If M is the mid-point of AC , explain why $MB = MF$.

(5 marks)

- (b) In Figure 9.2, the equation of circle RST is $x^2 + y^2 + 10x - 6y + 9 = 0$. QST is a straight line. The coordinates of P, Q, R, S are $(-17, 0), (0, 17), (-9, 0)$ and $(-2, 7)$ respectively.

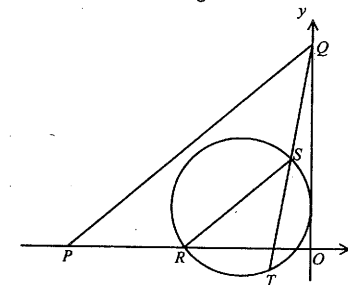


Figure 9.2

- (i) Prove that $PQ \parallel RS$.
- (ii) Find the coordinates of T .
- (iii) Are the points P, Q, O and T concyclic? Explain your answer.

(6 marks)

