

6.

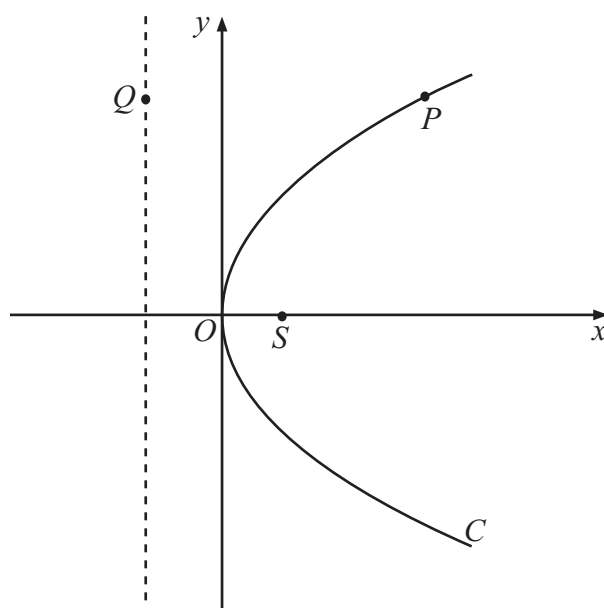


Figure 1

Figure 1 shows a sketch of the parabola C with equation $y^2 = 36x$. The point S is the focus of C .

- (a) Find the coordinates of S . (1)
- (b) Write down the equation of the directrix of C . (1)

Figure 1 shows the point P which lies on C , where $y > 0$, and the point Q which lies on the directrix of C . The line segment QP is parallel to the x -axis.

Given that the distance PS is 25,

- (c) write down the distance QP , (1)
- (d) find the coordinates of P , (3)
- (e) find the area of the trapezium $OSPQ$. (2)



7. $z = -24 - 7i$

(a) Show z on an Argand diagram. (1)

(b) Calculate $\arg z$, giving your answer in radians to 2 decimal places. (2)

It is given that

$$w = a + bi, \quad a \in \mathbb{R}, b \in \mathbb{R}$$

Given also that $|w| = 4$ and $\arg w = \frac{5\pi}{6}$,

(c) find the values of a and b , (3)

(d) find the value of $|zw|$. (3)



