**2.** The parabola $C$ has equation $y^2 = 10x$ and the point $S$ is the focus of $C$.

(a) Write down

(i) the coordinates of $S$,

(ii) the equation of the directrix of $C$.

**(2)**

Given that

- the point $P$ lies on $C$
- the point $Q$ lies on the directrix of $C$
- the line segment $QP$ is parallel to the $x$-axis
- the distance $PS$ is 20

(b) write down the distance $QP$

**(1)**

(c) determine the exact coordinates of the possible positions of $P$.

**(3)**

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**Question 2 continued**

**(Total for Question 2 is 6 marks)**