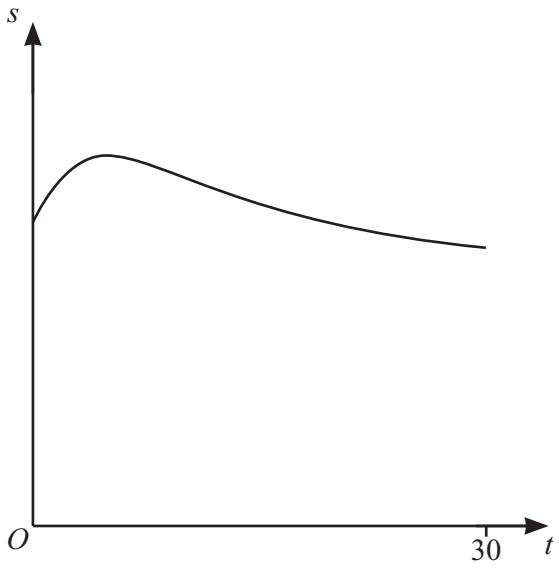
10 In this question the units are metres and seconds.

A particle moves along a straight line through a point A.

Its displacement, s, from A at time t is given by $s = \dfrac{10t + 100}{\sqrt{2t^2 + 100}}$.

The diagram shows the displacement–time graph for the first 30 seconds of the motion.



(a) Find the value of t when s is a maximum. [6]

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(b) The particle passes through its starting point again at time $t = T$.

(i) Find the total distance travelled by the particle during the first T seconds of its motion. [2]

(ii) Use algebra to find T. [3]

Question 11 is printed on the next page.

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11 A circle has equation $x^2 + y^2 - 25 = 0$.
A second circle has the same radius as the first circle, and the coordinates of its centre are both positive.
The two circles intersect at the points A and B.
The line AB has length 6 and is parallel to the line $y = -x$.

Find the equation of the second circle in the form $x^2 + y^2 + ax + by + c = 0$, where a, b and c are constants. [5]

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