

Shown is the first 10 seconds of the journey of a car

Work out an estimate for the distance the car travels in these 10 seconds

$$A: \frac{1}{2} \times 2.5 \times 5.25 = 6.5625 \text{ m}$$

$$B: \frac{1}{2} (5.25 + 7.5) \times 2.5 = 15.9375 \text{ m}$$

$$C: \frac{1}{2} (7.5 + 9) \times 2.5 = 20.625 \text{ m}$$

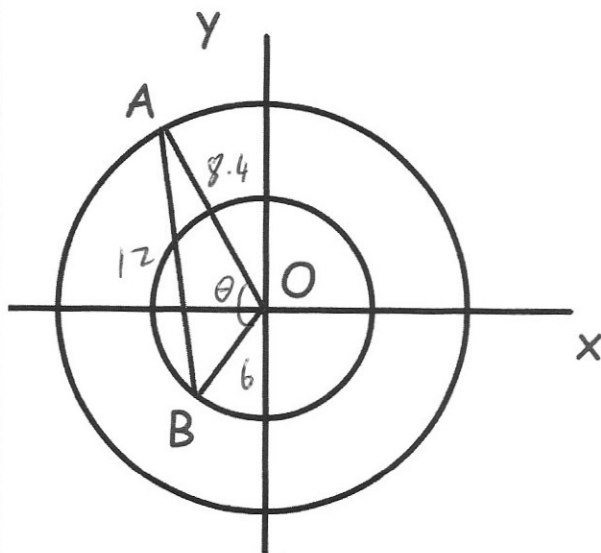
$$D: \frac{1}{2} (9 + 10.5) \times 2.5 = 24.375 \text{ m}$$

67.5 m

Is your answer an underestimate or an overestimate?

Explain your answer.

Underestimate as chords are below the actual curve.



A is a point on a circle.
B is a point on another circle with equation $x^2 + y^2 = 36$ $r = 6$

radius of the smaller circle : radius of the large circle is 5 : 7

$$AB = 12 \quad 6 \div 5 = 1.2$$

$$1.2 \times 7 = 8.4$$

Work out the size of angle AOB

$$\cos \theta = \frac{8.4^2 + 6^2 - 12^2}{2 \times 6 \times 8.4}$$

$$\theta = 111.8^\circ$$

Given

$$(ax + b)(x + 4)(x + c) \equiv 2x^3 + 19x^2 + 49x + 20$$

Find a, b and c

$$a = 2, \quad b = 1, \quad c = 5$$

$$a = 2$$

$$(2x^2 + 8x + bx + 4b)(x + c)$$

$$2x^3 + 2cx^2 + 8x^2 + 8cx + bx^2 + bcx + 4bx + 4bc$$

$$x^2: 2c + b + 8 = 19$$

$$x: 8c + bc + 4b = 49$$

$$\text{constants: } 4bc = 20$$

$$bc = 5$$

$$c = 5 \quad b = 1$$