

1. [-/2 Points]

DETAILS

SCALCET9 3.9.002.

- (a) If A is the area of a circle with radius r and the circle expands as time passes, find $\frac{dA}{dt}$ in terms of

$$\frac{dr}{dt}$$

$$\frac{dA}{dt} = \left($$

$$\left. \right) \frac{dr}{dt}$$

- (b) Suppose oil spills from a ruptured tanker and spreads in a circular pattern. If the radius of the oil spill increases at a constant rate of 2 m/s, exactly how fast (in m^2/s) is the area of the spill increasing when the radius is 26 m?

 m^2/s

2. [-/1 Points]

DETAILS

SCALCET9 3.9.003.

Each side of a square is increasing at a rate of 7 cm/s. At what rate (in cm^2/s) is the area of the square increasing when the area of the square is 36 cm^2 ?

 cm^2/s

Need Help?

3. [-/1 Points]

DETAILS

SCALCET9 3.9.006.MI.

The length of a rectangle is increasing at a rate of 5 cm/s and its width is increasing at a rate of 4 cm/s. When the length is 15 cm and the width is 12 cm, how fast is the area of the rectangle increasing (in cm^2/s)?

 cm^2/s

Need Help?

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4. [-/6 Points]

DETAILS

SCALCET9 3.9.007.MI.SA.

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

A cylindrical tank with radius 6 m is being filled with water at a rate of $4 \text{ m}^3/\text{min}$. How fast is the height of the water increasing (in m/min)?

[Click here to begin!](#)

5. [-/1 Points]

DETAILS

SCALCET9 3.9.007.MI.

A cylindrical tank with radius 7 m is being filled with water at a rate of $2 \text{ m}^3/\text{min}$. How fast is the height of the water increasing (in m/min)?

m/min

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6. [-/1 Points]

DETAILS

SCALCET9 3.9.014.

If a snowball melts so that its surface area decreases at a rate of $7 \text{ cm}^2/\text{min}$, find the rate (in cm/min) at which the diameter decreases when the diameter is 11 cm . (Round your answer to three decimal places.)

 cm/min

7. [-/1 Points]

DETAILS

SCALCET9 3.9.015.

A street light is mounted at the top of a 15-ft-tall pole. A man 6 feet tall walks away from the pole with a speed of 4 ft/s along a straight path. How fast (in ft/s) is the tip of his shadow moving when he is 45 feet from the pole?

 ft/s

8. [-/5 Points]

DETAILS

SCALCET9 3.9.017.MI.SA.

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

Two cars start moving from the same point. One travels south at 60 mi/h and the other travels west at 25 mi/h . At what rate (in mi/h) is the distance between the cars increasing three hours later?

[Click here to begin!](#)

9. [-/1 Points]

DETAILS

SCALCET9 3.9.017.MI.

Two cars start moving from the same point. One travels south at 48 mi/h and the other travels west at 20 mi/h. At what rate (in mi/h) is the distance between the cars increasing two hours later?

 mi/h

Need Help?

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10. [-/1 Points]

DETAILS

SCALCET9 3.9.012.

A particle moves along a hyperbola $xy = 12$. As it reaches the point $(6, 2)$, the y -coordinate is decreasing at a rate of 4 cm/s. How fast is the x -coordinate of the point changing at that instant?

 cm/s