3.9 Hmwk - Related Retes (Homework)

INSTRUCTOR
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Past Due **Due Date:** SUN, APR 12, 2026 11:59 PM CDT

Current Score: 20 / 20 POINTS | 100.0 %

Due date has passed. No changes can be made without an approved extension request.
You may not be granted an extension if you have already viewed the answer key.

VIEW ANSWER KEY

Scoring and Assignment Information

QUESTION	1	2	3	4	5	6	7	8	9	10
POINTS	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2	2 / 2

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your best submission for each question part is used for your score.

1. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 3.9.009.

Suppose $4x^2 + 9y^2 = 100$, where x and y are functions of t.

(a) If $\frac{dy}{dt} = \frac{1}{3}$, find $\frac{dx}{dt}$ when $x = 4$ and $y = 2$.

$\frac{dx}{dt} =$ -3/8 ✔ Fantastic work!

(b) If $\frac{dx}{dt} = 3$, find $\frac{dy}{dt}$ when $x = -4$ and $y = 2$.

$\frac{dy}{dt} =$ 8/3 ✔ That's it!

Resources

Read It

2. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 3.9.014.

If a snowball melts so that its surface area decreases at a rate of 2 cm^2/min, find the rate (in cm/min) at which the diameter decreases when the diameter is 12 cm. (Round your answer to three decimal places.)

$$112π

✔ cm/min

Resources

Read It

3. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 3.9.022.MI.

A boat is pulled into a dock by a rope attached to the bow of the boat and passing through a pulley on the dock that is 1 m higher than the bow of the boat. If the rope is pulled in at a rate of 1 m/s, how fast (in m/s) is the boat approaching the dock when it is 7 m from the dock? (Round your answer to two decimal places.)

1.01 ✔ m/s

Resources

Read It Watch It Tutorial

4. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 3.9.017.MI.

Two cars start moving from the same point. One travels south at 40 mi/h and the other travels west at 30 mi/h. At what rate (in mi/h) is the distance between the cars increasing four hours later?

50 ✔ mi/h

Resources

Read It Watch It Tutorial

5. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 3.9.047.

A plane flies horizontally at an altitude of 7 km and passes directly over a tracking telescope on the ground. When the angle of elevation is $\frac{\pi}{4}$, this angle is decreasing at a rate of $\frac{\pi}{4}$ rad/min. How fast is the plane traveling (in km/min) at that time? (Round your answer to two decimal places.)

$$11

✔ km/min

Resources

Read It Watch It

6. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 3.9.049.

A plane flying with a constant speed of 240 km/h passes over a ground radar station at an altitude of 1 km and climbs at an angle of 30°. At what rate (in km/h) is the distance from the plane to the radar station increasing a minute later? (Round your answer to the nearest whole number.)

236 ✔ km/h

Resources

Read It Watch It

7. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 3.9.013.

A plane flying horizontally at an altitude of 3 miles and a speed of 460 mi/h passes directly over a radar station. Find the rate at which the distance from the plane to the station is increasing when it has a total distance of 4 miles away from the station. (Round your answer to the nearest whole number.)

304 ✔ mi/h

Resources

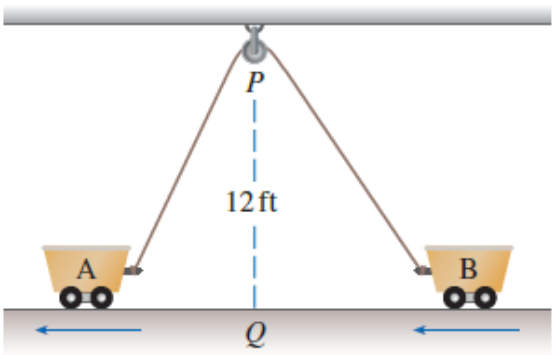
Read It Watch It

8. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 3.9.044.

Two carts, A and B, are connected by a rope 39 ft long that passes over a pulley *P*.



The point *Q* is on the floor 12 ft directly beneath *P* and between the carts. Cart A is being pulled away from *Q* at a speed of 2 ft/s. How fast (in ft/s) is cart B moving toward *Q* at the instant when cart A is 5 ft from *Q*? (Round your answer to two decimal places.)

0.87 ✔ ft/s

Resources

Read It

9. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 3.9.040.

When air expands adiabatically (without gaining or losing heat), its pressure P and volume V are related by the equation $PV^{1.4} = C$, where C is a constant. Suppose that at a certain instant the volume is 550 cm^3 and the pressure is 80 kPa and is decreasing at a rate of 10 kPa/min. At what rate (in cm^3/min) is the volume increasing at this instant? (Round your answer to the nearest whole number.)

49 ✓ cm^3/min

Resources

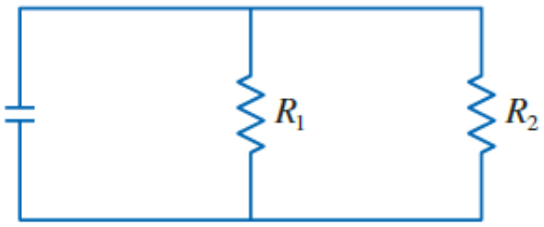
Read It

10. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 3.9.039.

If two resistors with resistances R_1 and R_2 are connected in parallel, as shown in the figure, then the total resistance R, measured in ohms (Ω), is given by $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$.



If R_1 and R_2 are increasing at rates of 0.3 Ω/s and 0.2 Ω/s, respectively, how fast (in Ω/s) is R changing when R_1 = 50 Ω and R_2 = 120 Ω? (Round your answer to three decimal places.)

0.167 ✓ Ω/s

Resources

Read It Watch It