

University of Bahrain
Department of Mathematics
MATHS101: Calculus I
Dr. Abdulla Eid



Worksheet: Related Rates

Students' Name: _____

1. If a line has a slope $\frac{2}{-3}$. What does that tell you about the line?

2. If $z = 3y^3$ and $\frac{dz}{dt} = 10$. What is $\frac{dy}{dt}$ when $y = 2$?

3. A circular disk is expanding at a rate $10 \text{ cm}^2/\text{second}$. Find the rate of change of the Diameter of the disk when the radius is 5 cm.

4. The length ℓ of a rectangle is decreasing at the rate of 2 cm/second while the width w is increasing at the rate of 2 cm/second when $\ell = 12$ cm and $w = 5$ cm. Find the rate of change of

1. Area

2. Perimeter

3. Length of the diagonal

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5. The area of a triangle with sides a and b and contained angle θ is given by

$$A = \frac{1}{2}ab \sin \theta$$

If a increases at a rate of 2.5 cm/min, b increases at a rate of 1.5 cm/min, and θ increases at a rate of 0.2 rad/min. How fast is the area increasing when $a = 2$ cm, $b = 3$ cm, and $\theta = \frac{\pi}{3}$.

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