

3. A ladder 10 feet long rests against a vertical wall. If the bottom of the ladder slides away from the wall at a speed of 2 feet per second, how fast is the angle between the top of the ladder and the wall changing when the angle is $\frac{\pi}{4}$ radians?

4. The coordinates of a particle in the metric xy -plane are differentiable functions of time t with $\frac{dx}{dt} = -1$ m/sec and $\frac{dy}{dt} = -5$ m/sec. How fast is the particle's distance from the origin changing as it passes through the point $(5, 12)$?