



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  $(5, 12)$ ?