1. Two cyclists leave from the same position. Cyclist A travels due North at 10 mph . One hour later, the cyclist B leaves from the position and travels due East at 20 mph . At what rate is the distance between the two cyclists changing $\mathbf{2}$ hours after cyclist B leaves?
2) Water is being pumped into a conical tank that is 8 feet tall and has a diameter of 10 feet. If the water is being pumped in at a constant rate of $3 / 5$ cubic feet per hour, at what rate is the depth of the water in the tank changing when the tank is half full? $\left(V=\frac{\pi}{3} r^{2} h\right)$
3) The radius of a circle is increasing at a constant rate of 0.2 meters per second. What is the rate of increase in the area of the circle at the instant when the circumference of the circle is $20 \pi$ meters?

$$
\left(A=\pi r^{2} \quad C=2 \pi r\right)
$$

4) A cylindrical tank has a height of 16 feet with the area of the circular base being $25 \pi \mathrm{ft}^{2}$.

Water flows at 8 cubic feet per minute into the tank. How fast is the water level rising when the tank is half full? $\quad\left(\right.$ Area of circle $\left.=\pi r^{2}\right) \quad\left(\right.$ Volume of cylinder $\left.=\pi r^{2} h\right)$

