99. First, we convert the angular velocity: $\omega = (2000)(2\pi/60) = 209$ rad/s. Also, we convert the plane's speed to SI units: $(480)(1000/3600) = 133$ m/s. We use Eq. 11-18 in part (a) and (implicitly) Eq. 4-39 in part (b).

(a) The speed of the tip as seen by the pilot is

$$v_t = \omega r = (209\,\text{rad/s})(1.5\,\text{m}) = 314\ \text{m/s}$$

which (since the radius is given to only two significant figures) we write as $v = 3.1 \times 10^2$ m/s.

(b) The plane's velocity $\vec{v}_p$ and the velocity of the tip $\vec{v}_t$ (found in the plane's frame of reference), in any of the tip's positions, must be perpendicular to each other. Thus, the speed as seen by an observer on the ground is

$$v = \sqrt{v_p^2 + v_t^2} = \sqrt{(133\,\text{m/s})^2 + (314\,\text{m/s})^2} \ = \ 3.4 \times 10^2\ \text{m/s}\ .$$