- 1. A flywheel rotates with a constant angular velocity.
  - a. Does a point on the rim of the wheel have a tangential acceleration? A radial acceleration? Are the magnitudes of these accelerations constant? Are the directions of these accelerations constant?
  - b. Answer the same questions for a flywheel that rotates with a constant angular acceleration.
- 2. An electric fan blade 1.10 m in diameter is rotating about a fixed axis with an initial angular velocity of 0.50 rad/sec. The angular acceleration of the fan blade is  $2.00 \text{ rad/s}^2$ .
  - a. Compute the angular velocity of the blade after 2.5 sec.
  - b. Through how many revolutions has the blade turned in this time interval?
  - c. What is the tangential speed of a point on the tip of the blade at t = 2.5 s?
  - d. What is the magnitude of the resultant acceleration of a point on the tip of the blade at t = 2.5 s?
- 3. To maximize the moment of inertia of a flywheel while minimizing its weight, what shape should the flywheel have? Explain.

## Answers:

2.

- a. 5.5 rad/sec
  - b. 1.19 revs
  - c. 3.03 m/s
  - d.  $16.67 \text{ m/s}^2$