Honors Pre-Calculus Name_____

1. The four 12 inch blades on a fan rotate at 700 rpm.

   a) Is the angular velocity the same for all the blades? If so, what is it in radians/minute?

   b) What is the angular velocity in radians/ sec?

   c) There is a dead fly on the very end of one of the blades. What is the linear velocity of the fly in in/min?

   d) What is the fly's linear velocity in in/sec? What is it in ft/min and ft/sec?

2. A record album has a diameter of 12 in. and turns $33\frac{1}{3}$ times per minute while on a turn table.

   a) Find its angular velocity in radians/minute.

   b) Find its angular velocity in radians/second.

   c) Find the linear velocity of a point on the edge of the record, in both in./min. and in./sec.

   d) Find the distance a piece of dust on the edge of the record will travel during 'You can't always get what you want' if it is 7 min. 30 sec.

3. Suzy is riding her bicycle at 10 miles/hour. The diameter of her wheel is 26 in.

a) What is the linear velocity of a point on the tire in in./hour? in in/min.?

b) What is the angular velocity of the wheel in rad/hour.? in rad/min.?

c) What are the revolutions/min. of the wheel?

d) Suzy wants to be safe, so she has a small reflector on her spokes exactly half way between the sprocket and edge of the tire. Find the revolutions/min of the reflector.

d) What is the angular velocity of the reflector in radians/min?

f) What is the linear velocity of the reflector?

g) Can she increase the linear velocity of the reflector without actually riding the bike any faster? If so, how?

4. In the figure below, there is a system of sprockets connected by belts. B and C are attached to each other and move as a single unit. Their diameters are as follows : A is 16 inches, B is 3 inches, C is 17 inches and D is 1.6 inches. A motor is connected to A which will ultimately drive D. If we need D to rotate at $7{,}000\pi$ radians/minute, what should the rpm of A be set at?