LAST NAME	FIRST NAME	DATE

ROUND YOUR ANSWERS TO 3 SIGNIFICANT DIGITS.

1 (5 points)**.** The radius of the Earth is about 3959 miles, and it makes a full turn around its axis of rotation in 23 hours 56 minutes and 4 seconds.

   (a) Find the angular velocity of a point on the Earth's equator in radians per hour.

   (b) Find the linear velocity of a point on the Earth's equator in miles per hour.

   (c) Find the linear velocity of a point on the Earth's equator in meters per second.

   (d) Sacramento's latitude is 38.58° N. Find the angular velocity of Sacramento as it turns with the Earth in radians per hour.

   (e) Find the linear velocity of Sacramento in miles per hour.

2 (2 points). A car with 17 inch diameter wheels is moving along a highway at 131 feet per second. Find the angular velocity of the wheels in radians per second and in full revolutions per second.

$\omega = $ _____ rad/s, $\qquad \omega = $ _____ revolutions per second

3 (2 points). A bike with 29 inch diameter wheels is moving at a constant rate, and the angular velocity of the wheel is 360° per second. Find the velocity of the bike in feet per second and in miles per hour.

$v = $ _____ feet/s, $\qquad v = $ _____ mi/hr

4 (2 points). The radius of the Earth's orbit around the Sun is 92.86×10^6 miles (technically, it's an elliptical orbit, but it happens to be almost circular), and it takes 365.25 days for the Earth to complete one full orbit around the Sun.

(a) Find the angular velocity of the Earth as it goes around the Sun in radians per hour.

(b) Find the linear velocity of the Earth with respect to a stationary Sun in miles per hour.