Topic 11 and 9 Review Rad Reviewer: Date:

1. The velocity of an object in meters per second, v, is related to its mass in kilograms, m, and its kinetic energy, E using the equation $v = \sqrt{\frac{2E}{m}}$. Kinetic energy is the energy that an object has when it is in motion.

a. A 3-kilogram bowling ball is moving at 6 meters per second. What is the kinetic energy of the bowling ball?

b. A 1,300-kilogram car is traveling at 13.4 meters per second. What is the kinetic energy of the car?

c. An egg weighs 0.56 kilograms and will break with 26.89 Joules of kinetic energy (Joules is a unit to measure energy). You drop an egg and it breaks open. What was the egg's velocity when it broke?

2. On Earth, the distance in miles you can view, d, is modeled by $d = \frac{6}{5}\sqrt{h}$, where h is the height in feet you are above the ground.

a. If you are 200 feet above the ground, how many miles can you view?

b. Is it possible for you to see 200 miles in front of you? How high would you have to be?

Solve the following equations, checking for extraneous solutions.

3. $\sqrt{4n+8} = n+3$

4. $4 + \sqrt{10-3x} = x$

5. $n - 5 = \sqrt{3n-21} + 2$

6. $3t - 6 = 2t + \sqrt{18-3t}$

Simplify and state the asymptotes of the following.

7. $\frac{x^2-7x-30}{x^2-5x-24}$

8. $\frac{3x^2+x-10}{x^2-4}$