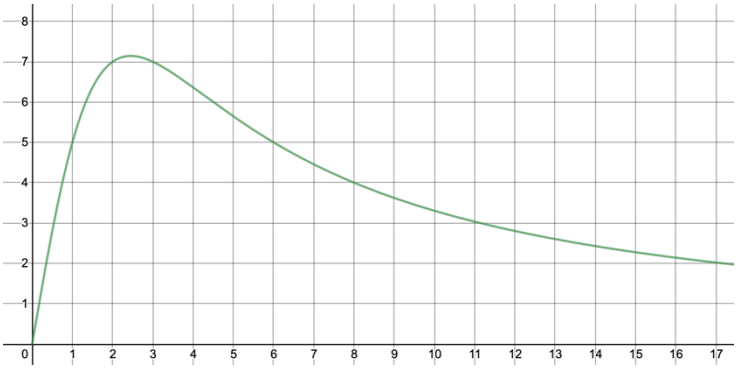
How Much Anesthesia Should the Patient Get? Name:_____

When patients undergo surgery, the anesthesiologist must administer the right amount of drugs to the patient to keep them sedated during the procedure. The well-being of the patient depends on the doctor's ability to predict how long the anesthesia will stay in the patient's bloodstream. How does he or she do this?

1. What do you think will happen if a patient receives too little or too much anesthesia?

2. The concentration of anesthesia in a person's blood stream can be modeled by $C(t) = \frac{35t}{t^2+6}$, where C is given as a percent and t is in hours. A graph of $C(t)$ is shown below.
   a. What do you notice about the graph? What do you wonder?
   b. What is the concentration of anesthesia after a half hour?



3. The anesthesia is effective once the concentration reaches 5%. How long after administering the drug should the surgeon wait to start the procedure? How do you know?

4. How long is the drug effective? Show how you can figure this out using a graph AND algebraically.

5. After many, many hours, what do you anticipate will happen to the concentration of anesthesia?

6. When is the concentration of anesthesia zero? How do you know?

Section 2.6 Day 1—Intro to Rational Functions

Important Ideas:

Check Your Understanding!

1. Find the horizontal asymptote of each function or explain why it does not exist.
   a. $f(x) = \frac{3x^2-5x+2}{2x^2-8x}$

   b. $g(x) = \frac{x^3-5x^6+1}{8x^3}$

2. Find the slant asymptote of $y = \frac{x^2+3x+2}{x-2}$.

3. A rare species of insect was discovered in the Amazon Rainforest. To protect the species from extinction, entomologists transferred a certain number of insects to a protected area. The population *P* of the new colony *t* days after the transfer is given by $P(t) = \frac{50(1+0.5t)}{2+0.01t}$.
   a. Find the y-intercept of $P(t)$. Interpret this value in the context of this problem.

   b. After how many days will the insect population reach 100? Show your work.

   c. Explain what will happen to the insect population after many, many years.