1. Determine an equation for the rational function that has:
   - $f(x)$ has a zero at $x = 2$
   - $f(x)$ has a vertical asymptote at $x = -1$
   - $f(x)$ has a horizontal asymptote at $y = 3$

2. A patient is being treated for a chronic illness. The concentration $C(x)$ in g per mL of a certain medication in the patient's bloodstream x weeks after taking the medication is approximated by $C(x) = \frac{8x^2-31x+35}{4x^2-16x+17}$. During what week is the largest concentration in the patient's bloodstream? How much is in their bloodstream during that week? As time passes how much medication will be in the patient's bloodstream?

3. Answer the following questions about the rational function $f(x) = \frac{x^2+3x-18}{x^2-4}$. Identify the:
   - Domain
   - Vertical Asymptote
   - Horizontal Asymptote
   - Zeros
   - $y-$intercept

4. The cost C in millions of dollars of removing x% of pollutant from a lake is given by $f(x) = \frac{50x}{100-x}$, where $0 \leq x \leq 100$. Use this information to answer these questions:
   - Evaluate $f(60)$ and interpret what it means in context of the problem
   - If a company has 25 million dollars to spend how much pollutant can they remove?
   - What amount of money does a company need to have in order to remove 95% of the pollution?
   - A current law states that in order for a state to receive federal funding at least 10% of the funding must be utilized clean water ways. If the government is funding 900 million to a certain state how much pollutant can they remove from the lake?

5. The number of random facts a person can learn depends on the number of minutes, m, they spend studying. This is represented by the following graph. Use the graph to find an equation that represents the number of facts a person can learn.