Inclass Activity 8.4-8.5

1. State the domain of each equation and solve the equation:
   a. \( \frac{-3}{20} + \frac{2}{x} = \frac{5}{4x} \)
   b. \( \frac{1}{x-3} + \frac{1}{x+3} = \frac{6}{x^2 - 9} \)
   c. \( \frac{4}{x^2 + x - 6} - \frac{1}{x^2 - 4} = \frac{2}{x^2 + 5x + 6} \)
   d. \( \frac{4x - 1}{2x + 3} = \frac{12x - 25}{6x - 2} \)

2. State the horizontal and vertical asymptotes. Graph the function:
   a. \( f(x) = \frac{2}{x + 3} \)

   Vertical Asymptote:

   Horizontal Asymptote:
3. Solve for the indicated variable:
   
   a. \( \frac{PV}{T} = \frac{pv}{t} \) for \( T \)
   
   b. \( y = \frac{x + z}{a - x} \) for \( x \)

4. At a winery in Napa Valley, California, one pipe can fill a tank with wine in 3 hours and another pipe can empty the tank in 5 hours. If the valves to both pipes are open, how long will it take to fill the empty tank?

5. Linda and John Franco own a house cleaning service. When Linda cleans Damon’s house by herself, it takes 7 hours. When Linda and John work together, they can clean the house in 4 hours. How long will it take John to clean the house by himself?

6. Dave and Sandy are frequent flyers with American Airlines. They often fly from Philadelphia to Chicago, a distance of 780 miles. On one particular trip they fly into the wind and the flight takes 2 hours. The return trip, with the wind behind them only takes \( 1 \frac{1}{2} \) hours. Find the speed of the wind and find the speed of the plane in still air.