Algebra 1 Honors

**11-2 Practice**

***Rational Functions***

**State the excluded value for each function.**

 **1.** *y* = $\frac{-1}{x}$**2.** *y* = $\frac{3}{x + 5}$ **3.** *y* = $\frac{2x}{x - 5}$

 **4.** *y* = $\frac{x - 1}{12x + 36}$ **5.** *y* = $\frac{x + 1}{2x + 3}$ **6.** *y* = $\frac{1}{5x - 2}$

**Identify the asymptotes of each function. Then graph the function. Identify the domain and range.**

 **7.** *y* = $\frac{1}{x}$**8.** *y* = $\frac{3}{x}$**9.** *y* = $\frac{2}{x - 1}$



**10.** *y* = $\frac{2}{x + 2}$ **11.** *y* = $\frac{1}{x - 3}$ + 2 **12.** *y* = $\frac{2}{x + 1}$ – 1





**13. AIR TRAVEL** Denver, Colorado, is located approximately 1000 miles from Indianapolis, Indiana. The average speed of a plane traveling between the two cities is given by *y* = $\frac{1000}{x}$, where *x* is the total flight time. Graph the function.

**11-2 Word Problem Practice**

***Rational Functions***

**1. BULLET TRAINS** The Shinkansen, or Japanese bullet train network, provides high-speed transportation throughout Japan. Trains regularly operate at speeds in excess of 200 kilometers per hour. The average speed of a bullet train traveling between Tokyo and Kyoto is given by *y* = $\frac{515}{x}$, where *x* is the total travel time in hours. Graph the function.



**2. DRIVING** Peter is driving to his grandparents’ house 40 miles away. During the trip, Peter makes a 30-minute stop for lunch. The average speed of Peter’s trip is given by *y* = $\frac{40}{x + 0.5}$, where *x* is the total time spent in the car. What are the asymptotes of the function?

**3. ERROR ANALYSIS** Nicolas is graphing the equation *y* = $\frac{20}{x + 3} - 6$ and draws a graph with asymptotes at *y* = 3 and *x* = – 6. Explain the error that Nicolas made in his graph.

**4. USED CARS** While researching cars to purchase online, Ms. Jacobs found that the value of a used car is inversely proportional to the age of the car. The average price of a used car is given by *y* = $\frac{17,900}{x + 1.2}$ + 100, where *x* is the age of the car. What are the asymptotes of the function? Explain why *x* = 0 cannot be an asymptote.