QUIZ 1 - MATH 111 Friday, January 26

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Consider the relation

$$\{(1,5),(2,5),(3,6),(4,7)\}.$$

   (a) Make the arrow diagram corresponding to the relation.

   (b) Is the relation a function? Explain.

   (c) If the relation is a function, is it one-to-one?

2. [6 points] Suppose $f(x) = x^2 + 10x$.

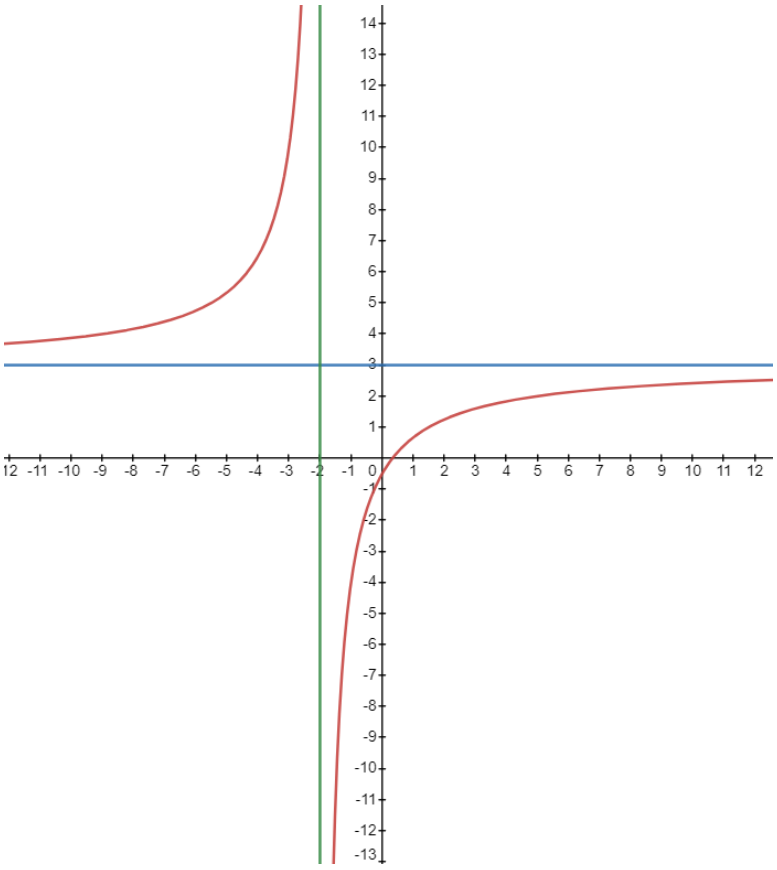
   (a) Calculate $\dfrac{f(x+3) - f(x)}{3}$ and simplify.

   (b) Solve the equation $f(x) = -16$ for x.

3. [6 points]

(a) Find the domain of $f(x) = \frac{3-x}{x^2+5x-24}$.

(b) Find the domain and range of the function whose graph is shown.



4. [4 points] Suppose a dance club charges \$15 admission fee per person for groups of up to 7 people. If a group has more than 7 people, they offer a discount of \$3 for each additional person (over 7).

   (a) Write a piece-wise defined function $C(n)$ giving the total admission cost C in terms of the number n of individuals in a group.

   (b) How much would it cost for 5 people to go dancing?

   (c) How much would it cost for 10 brothers and 10 sisters from a local fraternity and sorority, forming a single group, to go dancing?