Name: _____

Score: _____ /15

Worksheet 3 (Due Wed, May 14)

Math 1060Q – Summer 2014

Professor Hohn

Solve for x in each of the following equations. You must show all of your work to receive full credit!

1. Let $f(x) = x^2 + x + \dfrac{1}{x}$.

   (a) Find $f(5)$.

   (b) What is $f(-2)$?

   (c) Find $f\left(\dfrac{1}{a}\right)$. Simplify as much as possible.

2. Let $h(t) = 3t - t^2$.

   (a) What is $h(x-5)$? Simplify your answer as much as possible.

   (b) Evaluate and simplify $h\left(\frac{a}{b} - 1\right)$.

3. Let $Q(z) = x + 2z$.

   (a) What is the independent variable? (What is Q a function of?)

   (b) Find $Q(3)$.

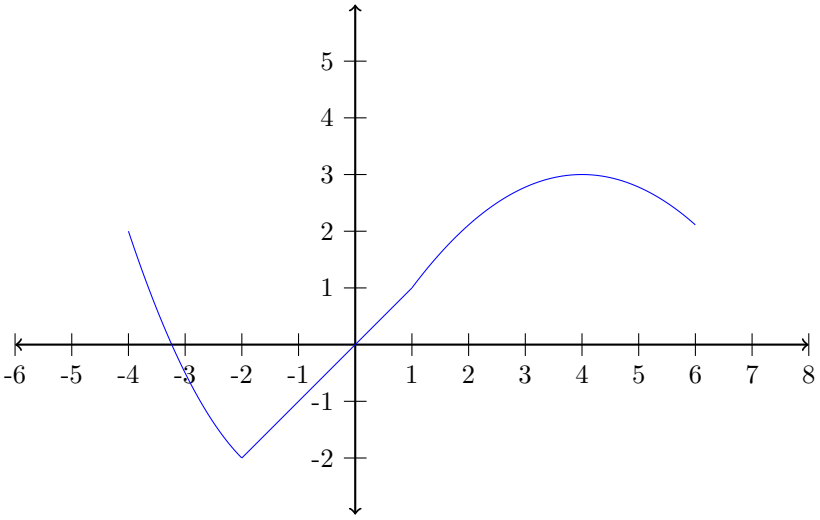
   (c) Find $Q(a)$.

4. Explain whether it is possible for f to be a function.

   (a) $f(2) = 4$ and $f(8) = 4$.

   (b) $f(4) = 2$ and $f(4) = 8$.

5. Use the graph of f below to answer the following questions.



(a) Estimate $f(3)$.

(b) What is the domain of f?

(c) What is the range of f?

6. Let

$$g(x) = \frac{x-1}{x+2}.$$

(a) Find a number b such that $g(b) = 3$.

(b) Simplify the expression $\dfrac{g(x) - g(3)}{x - 3}$.

7. Let $f(t)$ be defined as

$$f(t) = \begin{cases} 2t + 9 & \text{if } t < 0 \\ 3t - 10 & \text{if } t \geqslant 0. \end{cases}$$

(a) Evaluate $f(-3)$.

(b) Find two different values of t such that $f(t) = 4$.

8. Give an example of a function whose domain equals the set of really numbers and whose range equals the set $\{-1, 0, 1\}$.