Test1 Review, MAT 1375 Professor Chiu

1. True or False questions:

a) _____ The parabola $y = x^2 + 3$ is the parabola $y = x^2$ shifted up by 3 units.

b) _____ $y^2 = x$ is a function of x.

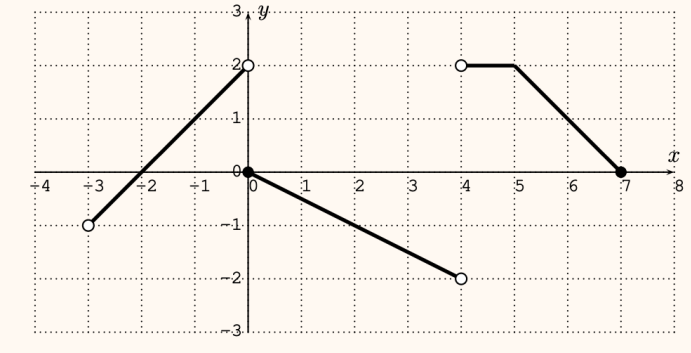
c) _____ Let $f(x)$ and $g(x)$ be two functions. Then $(f \circ g)(x) = (g \circ f)(x)$.

d) _____ The function $f(x) = 3x^4 - 4x^2 + 5$ is even.

e) _____ Let $f(x) = 7\sqrt{x}$ and $g(x) = 5\sqrt{x}$. Then the domain of $(f + g)(x)$ is $[0, \infty)$.

2. Given a function $f(x) = x^2 + 2x - 3$. Find $\frac{f(x+h)-f(x)}{h}$.

3. Consider the following graph of a function f.



(a) What is the domain of f?
(b) What is the range of f?
(c) For which x is $f(x) < 1$?
(d) Find $f(0) + 5$.
(e) Find $f(4)$.

4. Let $f(x) = x - 2$ and $g(x) = x^2 - 7x + 10$. Find $\frac{f}{g}$ and state its domain.

5. Let $f(x) = \frac{3}{x+4}$ and $g(x) = x^2 - 5x$. Find $(f \circ g)(x)$ and state its domain.

6. Use the 4-step strategy to find the inverse of the function

$$f(x) = \frac{3x+1}{3x-2}.$$