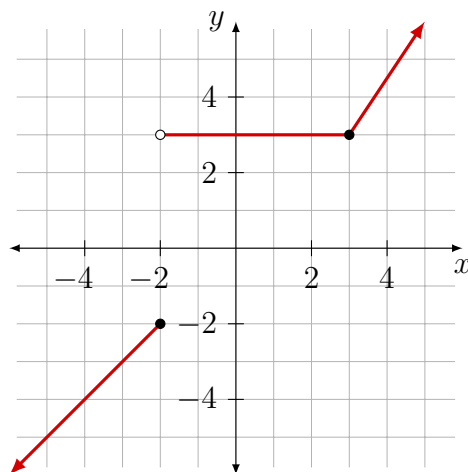


MATH 125
SPRING 2013
EXAM 1

NAME:

1. 10 pts. each Consider the points $(-2, 5)$ and $(-6, -1)$.
 - (a) Find the exact distance between the two points.
 - (b) Find the midpoint of the segment joining the two points.
2. 10 pts. Find the equation of the circle with center $(-4, 2)$ and diameter of length 3.
3. 10 pts. Find the slope and intercepts of the line given by $2x - 5y = 1$, then graph the line.
4. 10 pts. Given $f(x) = -x^2 + 3x - 2$, find $f(0)$, $f(4)$, and $f(-x)$.
5. 10 pts. each Find the domain of the function in interval notation.
 - (a) $f(x) = \frac{2x - 5}{x + 7}$
 - (b) $g(x) = \sqrt{4 - 5x}$
 - (c) $h(x) = \frac{\sqrt{x + 9}}{x - 8}$
6. 10 pts. each Refer to the functions f , g , and h in Problem 5.
 - (a) Find fg and its domain.
 - (b) Find h/f and its domain.
 - (c) Find $g \circ g$ and its domain.
7. 10 pts. each Let $F(x) = \sqrt{x + 5}$ and $G(x) = x^2 - 5$.
 - (a) Find $F \circ G$ and its domain.
 - (b) Find $G \circ F$ and its domain.
8. 10 pts. Let $h = \frac{1}{\sqrt{3x + 7}}$. Find f and g such that $f \neq h$, $g \neq h$, and $f \circ g = h$.
9. 10 pts. Given the piecewise-defined function
$$\varphi(x) = \begin{cases} -3x - 18, & \text{for } x < -5 \\ 1, & \text{for } -5 \leq x < 1 \\ x + 2, & \text{for } x \geq 1 \end{cases}$$
find $\varphi(-5)$, $\varphi(0)$, $\varphi(1)$, and $\varphi(3)$.

10. 10 pts. each Let H be the function with the following graph:



- (a) Find the domain and range of H .
- (b) Write an equation for H .
11. 10 pts. Determine algebraically if the graph of $y^3 = 2x^2$ is symmetric with respect to the x -axis, the y -axis, or the origin.
12. 10 pts. Write an equation for the function whose graph has the shape of $y = \sqrt{x}$, but shifted left 5 units and down 3 units.