Name _____ Signature _____

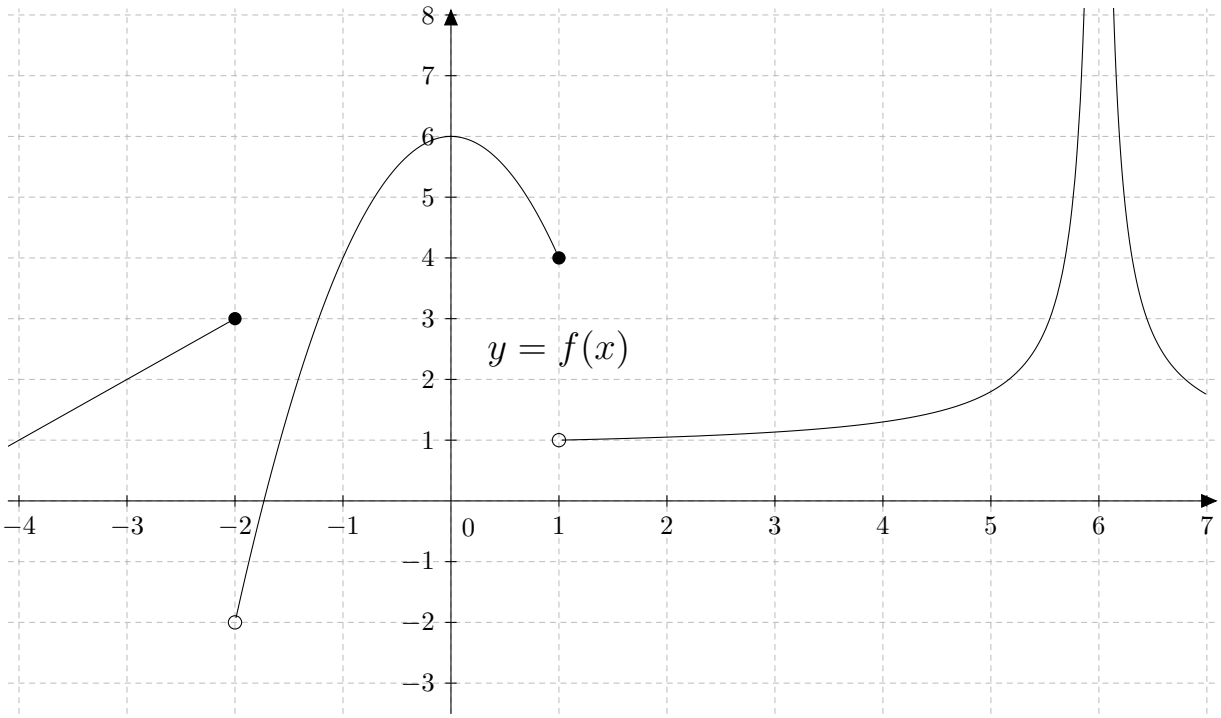
Math 220 – Exam 1 – February 13, 2014

1. (5 points) Write an equation for the line with slope 2 that passes through the point $(0, 1)$.

2. (4 points) If $r(x) = x + 5$ and $u(x) = x^3$, find $r(u(x))$.

3. (9 points) Find the constant c that makes the following function continuous.

$$q(x) = \begin{cases} 3 & \text{if } x > 2 \\ x + c & \text{if } x \leq 2 \end{cases}$$



4. (4 points each) Consider the graph of $y = f(x)$ above. State the value of each of the below quantities. If the quantity does not exist, write "does not exist".

A. $\lim_{x \to 0} f(x)$

B. $\lim_{x \to -2^-} f(x)$

C. $\lim_{x \to -2^+} f(x)$

D. $\lim_{x \to 6} f(x)$

E. $\lim_{x \to 1^-} f(x)$

F. $\lim_{x \to 1^+} f(x)$

G. $\lim_{x \to 1} f(x)$

H. $f(1)$

5. (7 points each) Evaluate the following limits.

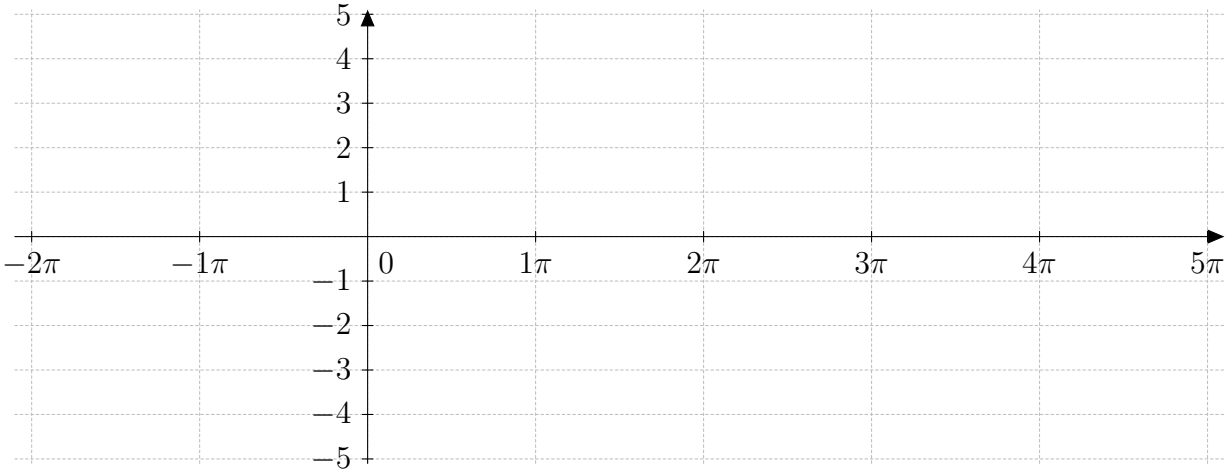
A. $\lim_{x \to 0} \dfrac{3\sin(x)}{x}$

B. $\lim_{x \to 5} \dfrac{x-5}{x^2-25}$

C. $\lim_{x \to 4} \dfrac{2-\sqrt{x}}{x-4}$

D. $\lim_{x \to 0} x^2 \sin\left(\dfrac{1}{x}\right)$

6. (8 points) Sketch the graph of $y = 3\sin(x) + 1$.



7. (5 points) Given that $\lim_{x\to 2} w(x) = 3$ and $\lim_{x\to 2} h(x) = 5$, find $\lim_{x\to 2} \dfrac{w(x)+1}{h(x)}$.

8. (9 points) Suppose that a particle has position function $s(t) = t^2 + 1$ meters at time t seconds. Find the average velocity over the time interval $[2, 4]$.