Math 203 Spring 2019 Professor MG
Classwork 2 Name: _____

Show all work and circle/box your final answer. All answers must be simplified unless stated otherwise.

1. Find the following limits:
   (a) $\lim_{x\to 3} \sqrt{x^2+16}$
   (b) $\lim_{x\to 0} \dfrac{x^2+3x}{x}$
   (c) $\lim_{x\to 2} \dfrac{3x^2-x-10}{x^2-4}$
   (d) $\lim_{x\to \infty} \dfrac{x^3+2x^2+1}{5x^5+4x^4+7}$
2. Evaluate the following limits for $f(x)$

$$f(x) = \begin{cases} x^2-3x+4 & x \le 1 \\ x+1 & 1 < x \le 3 \\ x^2-3x+4 & x > 3 \end{cases}$$

   (a) $\lim_{x\to 1^-} f(x)$
   (b) $\lim_{x\to 1^+} f(x)$
   (c) $\lim_{x\to 1} f(x)$
   (d) $\lim_{x\to 3^-} f(x)$
   (e) $\lim_{x\to 3^+} f(x)$
   (f) $\lim_{x\to 3} f(x)$
3. Is the following function continuous at $x = 1$? $x = 0$?

$$f(x) = \begin{cases} \frac{2x-10}{4x^2+2} & x < 0 \\ 5 & 0 \le x < 1 \\ \sqrt{x+24} & x \ge 1 \end{cases}$$