

## Homework Set 3

DUE: OCT 1, 2018 (AT THE BEGINNING OF CLASS)

**To be handed in***Please write your solutions to Problems 1 and 2 on only 1 sheet of paper.*

1. What is the value of  $a$  that makes the following function continuous at all points?

$$f(x) = \begin{cases} x^2 + a^2 + 4 & \text{if } x \leq 0 \\ \frac{4 \sin(ax)}{x} & \text{if } x > 0 \end{cases}$$

2. Compute the following limits (if they exist):

- a)  $\lim_{x \rightarrow +\infty} \frac{x^2 + 3x - 4}{8x - 5}$
- b)  $\lim_{x \rightarrow -\infty} \frac{x^7 + 2x^4 + 8}{5x^3 - 12}$
- c)  $\lim_{x \rightarrow +\infty} \frac{2x^6 + 3x^5 - 7x^2 + 9}{8x^6 - 3x^3 + 10}$
- d)  $\lim_{x \rightarrow 1} \frac{x^2 + 2x + 3}{x - 1}$
- e)  $\lim_{x \rightarrow +\infty} \frac{4x^3 + 3x^2 - 1}{5x^{10} + 4x^2 + 2}$

3. Textbook (5th edition) Section 2.4, Exercises 1-6, 40-48, 70-72
4. Textbook (5th edition) Section 2.5, Exercises 1-4, 13-16
5. Textbook (5th edition) Section 4.5, Exercises 1-6, 19-28, 95-96