

Your Name: \_\_\_\_\_

Your Partner: \_\_\_\_\_

## Quiz 3

Math 253

You have 20 minutes to complete this quiz. When you're finished, first check your work if there is time remaining, then turn it in. You may use a scientific calculator, but not a graphing one, and not any internet-connected device. You may work with one other student. **Enough work should be shown that there is no question about the mathematical process used to obtain your answers.**

1. (8 points) Does the series

$$\sum_{n=1}^{\infty} \frac{1}{n + n^{1/2}}$$

converge or diverge?

**2.** (12 points) Consider the series

$$\sum_{n=1}^{\infty} \frac{1}{n^2 + n^a},$$

where  $a$  is a real number.

a) (4 points) When  $a = \frac{1}{2}$ , does the series converge or diverge?

b) (8 points) For any value of  $a$ , does the series converge or diverge? Fully explain your answer.