

NAME: _____

Panther ID: _____

Quiz 1 - MAC 2312, Spring 2017

1. (3 pts) Is the statement below true or false? Answer (1 pt) and briefly justify your answer (2 pts).
Any monotone sequence is bounded. **True** **False**

Justification:

2. (3 pts) Find the limit of the sequence. If the limit does not exist or is infinite, explain the reason.

$$\lim_{n \rightarrow +\infty} n^2 e^{-n}$$

3. (a) (2 pts) The first four terms of a sequence $\{a_n\}_{n=1}^{+\infty}$ are given below. Assuming the pattern continues, fill in expressions for the next term, a_5 , and for the general term, a_n :

$$a_1 = 2 - \frac{\sqrt{1}}{1}, \quad a_2 = 2 + \frac{\sqrt{2}}{3}, \quad a_3 = 2 - \frac{\sqrt{3}}{5}, \quad a_4 = 2 + \frac{\sqrt{4}}{7}, \quad a_5 = \quad , \quad \dots, \quad a_n = \quad , \quad \dots$$

- (b) (3 pts) Is the sequence $\{a_n\}_{n=1}^{+\infty}$ given in part (a) convergent? Answer and briefly justify.