Quiz 2

MATH 11A - Discussion Section F
February 2, 2017

Name & ID # : _____

Directions: Leave your final answer in exact form and box it in. You are more than welcome to write on the back if you find it necessary.
Definition: A limit of a sequence or function is defined only when the sequence or function approaches a single finite value in the real numbers.

---

(1) Consider the difference equation given by:

$$\mathcal{P}_{t+1} = \lambda \mathcal{P}_t \quad \text{where} \quad \mathcal{P}_0 = 1$$

Evaluate:

$$\lim_{t \to \infty} P_t$$

given:

(a) $\lambda \in (-\infty, -1)$
(b) $\lambda = -1$
(c) $\lambda \in (-1, 1)$
(d) $\lambda = 1$
(e) $\lambda \in (1, \infty)$

(2) Determine the limit of the sequence:

$$a_{n+1} = \frac{6}{1 + a_n} \quad \text{where} \quad a_1 = 1$$

You may assume that the limit exists in order to determine its value.