AUC apCalculus BC

Assignment 2

PROBLEM 3.1. *For each of the following functions limit statements write and prove the limit statement by the rigorous definition of limits:*

(1) $\displaystyle\lim_{n \to +\infty} \frac{\cos(n^{e^n})}{n^8 - 3} = 0.$

(2) $\displaystyle\lim_{n \to +\infty} \frac{\sin(n^2 + 1)}{n^8 - 3} = 0.$

(3) $\displaystyle\lim_{n \to +\infty} \frac{\sin(n)}{n^7 - 1} + \frac{\sin(n^2)}{n^4 + 30} = 0.$

PROBLEM 3.3. *For each of the following functions limit statements write and prove the limit statement by the rigorous definition of limits:*

(1) $\displaystyle\lim_{n \to +\infty} n^8 - 3 = +\infty.$

(2) $\displaystyle\lim_{n \to +\infty} n^8 + 3 = +\infty.$