Assignment #7 **Name** _____

Due 20 March 2015

1. Let $a_1 = 6$ and, for $n \geq 2$, let $a_n = \frac{2}{3}a_{n-1} + 4$.

   (a) Find a_2, a_3, and a_4.

   (b) Show that $\{a_n\}$ is monotone increasing.

   (c) Show that $\{a_n\}$ is bounded above.

   (d) Find the limit of the sequence.

2. In each case, find the limit of the sequence $\{a_n\}$:

(a) $a_n = \dfrac{\sin(n)}{n^2} + \dfrac{4^n + 2^n}{4^n + e^n}$

(b) $a_n = n^2 e^{-n} + \dfrac{n^2 - 3}{n^2 + 4}$