Worksheet #5

(1) Determine if the sequence converges. If it does, find its limit.

(a) $a_n = \frac{3n+2}{n+1}$

(b) $a_n = e^{-n}\sin n$

(c) $a_n = \frac{5n^3+2n+4}{n^2+6}$

(d) $a_n = \left(1 + \frac{2}{n}\right)^{n/2}$

(2) Indicate if the series converges. If it converges, find its sum.

(a) $\sum_{k=1}^{\infty}\left[2(\frac{1}{4})^k + 3(-\frac{1}{5})^k\right]$

(b) $\displaystyle\sum_{k=1}^{\infty}(\frac{9}{8})^k$

(c) $\displaystyle\sum_{k=1}^{\infty}\frac{2}{(k+2)k}$