Homework Set 13

(sect 8.2: Sum of a Series)

Determine whether each series is convergent or divergent. If it is convergent, find its sum.

$2 + \frac{6}{5} + \frac{18}{25} + \frac{54}{125} + \cdots$

$\sum_{n=0}^{\infty} 3\left(\frac{4}{7}\right)^n$

$\sum_{n=1}^{\infty} \frac{4}{n(n+2)}$

$\sum_{n=1}^{\infty} \frac{1}{n}$

$\sum_{n=1}^{\infty} \frac{3^{n-1}}{4^{n+1}}$

[hint: recall that $\ln\left(\frac{a}{b}\right) = \ln(a) - \ln(b)$]

$\sum_{n=1}^{\infty} \ln\left(\frac{n}{n+1}\right)$