Worksheet #6

(1) Use the monotonic convergence theorem to prove the sequences converge.
   (a) $a_n = \frac{4n-3}{2^n}$

   (b) $a_{n+1} = 1 + \frac{1}{2}a_n$ where $a_1 = 1$. (This is a recurrence relation. See page 723 for an example.)

(2) Determine whether each integral is convergent or divergent. Evaluate those that are convergent.
   (a) $\displaystyle\int_2^3 \frac{1}{\sqrt{3-x}}dx$

   (b) $\displaystyle\int_{-\infty}^{\infty} \cos(\pi t)dt$

   (c) $\displaystyle\int_1^{\infty} \frac{\ln x}{x}dx$

   (d) $\displaystyle\int_4^{\infty} \frac{1}{\sqrt{x-3}}dx$