Calculus II F'16
Exam 2 Name: _____

Make sure to show your work (answers without supporting work will receive no credit). Do not use a crib sheet, calculator, phone, etc.

1. A sequence is defined using: $a_{n+1} = 2a_n - 4/a_n$. Suppose someone computes the a_n's and from this claims that the sequence approaches 6 (i.e., $\lim_{n\to\infty} a_n = 6$). Explain why they are wrong.

2. Determine if the following converge or diverge.

a) $\sum_{k=0}^{\infty} \frac{2+k}{5+k}$

b) $\sum_{k=1}^{\infty} \frac{3^k}{k!}$

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

d) $\displaystyle\sum_{k=1}^{\infty} \frac{1}{\sqrt{1+k^3}}$

4. Let $f(x) = \dfrac{1}{\sqrt{1+x}}$.

a) Use $p_1(x)$ to find an approximate value for $\dfrac{1}{\sqrt{1.5}}$.

b) Use the remainder to find a bound on the error for the approximation in part (a).

3. This problem concerns the Taylor series $\sum_{k=1}^{\infty} \frac{(x+7)^k}{k2^k}$.

a) What is the center?

b) Determine the interval of convergence.

Workspace