Name:

Math 116 Practice Exam 2

November 9, 2010

1) Find the sum of the series or show that it diverges.

a) $\displaystyle\sum_{n=3}^{\infty} \frac{8^{2n}}{5^{3n}}$

b) $\displaystyle\sum_{n=1}^{\infty} 13^{\frac{1}{n}} - 13^{\frac{1}{n+1}}$ (*Hint:* partial sums.)

c) $\displaystyle\sum_{n=0}^{\infty} (-1)^n \frac{\pi^{2n+1}}{16^n (2n)!}$

2) Evaluate the integral $\displaystyle\int_8^{11} \frac{dx}{x^2 - 7x - 18}$.

3) Determine whether the following series converge or diverge.

a) $\displaystyle\sum_{n=4}^{\infty} \frac{(-e)^n}{(n+8)!}$

b) $\displaystyle\sum_{n=1}^{\infty} 12\cos\left(\frac{1}{n^2}\right)$

c) $\displaystyle\sum_{n=2}^{\infty} \frac{\ln(n)}{n^{1/7}}$

4) Find the limit of the sequence or show that it diverges.

a) $\left\{ \left(\dfrac{5n+8}{\sqrt{36n^2+14n+1}} \right) \right\}_{n=6}^{\infty}$

b) $\left\{ \left(\dfrac{n}{n+4} \right)^n \right\}_{n=1}^{\infty}$

1) Consider the power series $\displaystyle\sum_{n=4}^{\infty} \frac{(2x-4)^n}{(-16)^n n^{7/4}}$.

a) What is the center of the series?

b) Find the radius of convergence of the series.