MATH 214 (R1) Winter 2008
Intermediate Calculus I

Problem Set #2

Completion Date: Friday January 25, 2008

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Question 1. [Sec. 12.4, # 8] Determine whether the series

$$\sum_{n=1}^{\infty} \frac{4 + 3^n}{2^n}$$

converges or diverges.

Question 2. [Sec. 12.4, # 10] Determine whether the series

$$\sum_{n=1}^{\infty} \frac{n^2 - 1}{3n^4 + 1}$$

converges or diverges.

Question 3. [Sec. 12.4, # 12] Determine whether the series

$$\sum_{n=0}^{\infty} \frac{1 + \sin n}{10^n}$$

converges or diverges.

Question 4. [Sec. 12.4, # 20] Determine whether the series

$$\sum_{n=1}^{\infty} \frac{1 + 2^n}{1 + 3^n}$$

converges or diverges.

Question 5. [Sec. 12.4, # 26] Determine whether the series

$$\sum_{n=1}^{\infty} \frac{n + 5}{\sqrt[3]{n^7 + n^2}}$$

converges or diverges.

Question 6. [Sec. 12.4, # 28] Determine whether the series

$$\sum_{n=1}^{\infty} \frac{2n^2 + 7n}{3^n(n^2 + 5n - 1)}$$

converges or diverges.

Question 7. [Sec. 12.5, # 6] Test the series

$$\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{3n - 1}$$

for convergence or divergence.

Question 8. **[Sec. 12.5, # 8]** Test the series

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

for convergence or divergence.

Question 9. **[Sec. 12.5, # 12]** Test the series

$$\sum_{n=1}^{\infty}(-1)^{n-1}\frac{e^{1/n}}{n}$$

for convergence or divergence.

Question 10. **[Sec. 12.5, # 16]** Test the series

$$\sum_{n=1}^{\infty}\frac{\sin(n\pi/2)}{n!}$$

for convergence or divergence.

Question 11. **[Sec. 12.5, # 20]** Test the series

$$\sum_{n=1}^{\infty}\left(-\frac{n}{5}\right)^{n}$$

for convergence or divergence.

Question 12. **[Sec. 12.5, # 24]** How many terms of the series

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

do we need to add in order to find the sum to an accuracy with $|\text{error}| < 0.001$?

Question 13. **[Sec. 12.5, # 32]** For which values of p is the series

$$\sum_{n=1}^{\infty}\frac{(-1)^{n-1}}{n^p}$$

convergent?