Exam 3 covers lessons 18-27.

1. P. 547: 24,29.

2. P. 759: 1,3,5,6,11,12,13,14,15,18,19,20,23,24,27,35,40,42.

3. P. 733: 5,14,16,26,30.

Answers to Even Numbered Problems

P.547

24. $M_x = -3$. $M_y = 42$. $(\bar{x}, \bar{y}) = (21/8, -3/16)$.

P.759

6. The sequence converges and the limit is 0.

12. Diverges by the Limit Comparison Test, using $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n}$.

14. Converges by the Alternating Series Test.

18. Converges by the Root Test.

20. Diverges by the Ratio Test.

24. Absolutely convergent.

40. $R = 5$. The interval of convergence is $[-5, 5]$.

42. $R = \infty$. The interval of convergence is $(-\infty, \infty)$.

P.733

14. (a) $\ln(1+x) = \displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n x^{n+1}}{n+1}$. $R = 1$.

(b) $x\ln(1+x) = \displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n x^{n+2}}{n+1}$. $R = 1$.

(c) $\ln(1+x^2) = \displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+2}}{n+1}$. $R = 1$.

16. $\displaystyle\sum_{n=0}^{\infty} 2^n(n+1)x^{n+2}$. $R = \frac{1}{2}$.

26. $\displaystyle\sum_{n=0}^{\infty}(-1)^n \frac{x^{4n+3}}{(2n+1)(4n+3)} + C$. $R = 1$.

30. $\displaystyle\int_0^{0.3} \frac{x^2}{1+x^4}\,dx = \sum_{n=0}^{\infty}(-1)^n \frac{3^{4n+3}}{(4n+3)10^{4n+3}}$.

$\displaystyle\int_0^{0.3} \frac{x^2}{1+x^4}\,dx \approx \frac{3^3}{3\cdot 10^3} - \frac{3^7}{7\cdot 10^7}$, to six decimal places.