

MATE 3032 assignment 10: sections 11.5, 11.6, 11.7

82. Test the series for convergence or divergence:

(a) $\sum_{n=1}^{\infty} \frac{(-1)^n}{3 + 4n}$

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

(c) $\sum_{n=1}^{\infty} (-1)^{n+1} n^2 e^{-n}$

(d) $\frac{2}{6} - \frac{4}{7} + \frac{6}{8} - \frac{8}{9} + \frac{10}{10} - \frac{12}{11} + \dots$

83. Exercise 23 p.736.

84. Exercise 27 p.736. Correct to four decimal places means that the error is smaller than 0.5×10^{-4} .

85. For which values of p is the series $\sum_{k=1}^{\infty} \frac{(-1)^k}{k^p}$ convergent?

86. Exercise 35 p.737.

87. Use a test to determine whether the series is convergent or divergent:

(a) $\sum_{j=1}^{\infty} \frac{j^{98} 100^j}{j!}$

(b) $\sum_{n=2}^{\infty} \frac{(-1)^n}{\ln n^n}$

(c) $\sum_{n=1}^{\infty} \left(\frac{n^2 + 1}{2n^2 - 1} \right)^n$.

88. Use a test to determine whether the series is convergent or divergent:

(a) $\sum_{k=1}^{\infty} (-1)^k \frac{2^k k!}{3 \cdot 5 \cdot 7 \cdots (2k + 1)}$

(b) $\sum_{n=2}^{\infty} \frac{(-1)^n}{n \ln n}$

$$(c) \sum_{j=1}^{\infty} \left(\frac{1-j}{3+2j} \right)^j.$$

89. Exercise 40 p.743.

90. Exercise 43 p.743.

91. Exercise 45 p.743.

92. Test the series for convergence or divergence:

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

$$(b) \sum_{n=0}^{\infty} \frac{(-1)^n}{1+\sqrt{n}}$$

$$(c) \sum_{k=1}^{\infty} \left(\frac{k+1}{k} \right)^{k^2}$$

$$(d) \sum_{n=1}^{\infty} (\sqrt[n]{2} - 1)$$

$$(e) \sum_{n=1}^{\infty} \frac{1}{n^{1+2/n}}$$

$$(f) \sum_{n=2}^{\infty} \frac{1}{n\sqrt{\ln n}}.$$