

Spring 2004 Midterm II answers

1. d
2. b
3. a
4. b
5. b
6. d. NOTE: The topic in part e) is not included in Math141 SP05 Midterm II.
7. a) must diverge; b) must diverge; c) can not be determined; d) must converge.
8. a) converges to $\sqrt{3}/2$; b) diverges; c) converges to 0; d) converges to 1; e) converges to 1.
9. NOTE : The concept of the absolute/conditional convergence is not included in Math141 SP05 Midterm II. However, you should be able to test the series in parts b), c) and d) for convergence/divergence.
 - a) converges (absolutely) ; b) diverges; c) converges (conditionally);
 - d) converges (conditionally);
10. Diverges.
11. Diverges by limit comparison test to $\sum \frac{1}{\sqrt{n}}$ (or $\sum \frac{1}{3\sqrt{n}}$).
12. This topic is not included in Math141 SP05 Midterm II. However, you should be able to test the series for convergence/divergence. The series converges conditionally, which means that the series converges (by the Alternating Series Theorem), while the series $\sum \frac{\ln n}{n}$ diverges (by Direct Comparison with $\sum 1/n$ or Integral Test).