

MA341 Spring 2018 **Study Guide for Exam 1**

1. p.15 #1
2. p.16 #13
3. p.37 State the definition of upper bound and lower bound (this is 2.3.1) and state the definition of $\sup S$ (this is 2.3.2)
4. p.48 State the Nested Interval Property (this is 2.5.2)
5. p.52 #8
6. p.56 State and prove the Uniqueness of Limits (this is 3.1.4)
7. p.64 State and prove the Product Rule for Sequences.
8. p.68 Prove Theorem 3.2.10, the theorem will be stated for you and you will prove it.
9. pp.71-72 State and prove the Monotone Convergence Theorem part (a) (this is 3.3.2)
10. p.77 #1
11. pp.81-82 State the Bolzano-Weierstrass Theorem (this is 3.4.8) and give the Second Proof
12. p.84 #7b, #7c
13. p.86 State and prove the Cauchy Convergence Criterion as follows: If X is a Cauchy sequence, then it is a convergent sequence. (This is the "if" direction).
14. p.96 3.7.6 Example (b). Prove that the harmonic series $\sum_{n=1}^{\infty} \frac{1}{n}$ diverges. The proof is at top of p. 97.
15. p.100 #3(a)