# Real Analysis Proofs Solutions

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### Real Analysis Proofs Solutions

Real Analysis Proofs Solutions | calendar.pridesource Son3+5n+3(n2+n)+6 is a multiple of 6 which implies (n+1)3+5(n+ 1) is a multiple of 6. This completes our proof by induction, i.e., n3+5nis divisible by 6 (or multiple of 6) for all natural numbersn ≥1. Solution 2.6 It is clear that forn= 0, both sides of the inequality are equal to 1.

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FINAL EXAMINATION SOLUTIONS, MAS311 REAL ANALYSIS I 3 (ii) Show that sn ≤ 2 for all n. (Hint: Use induction again.) (5 marks) Proof. Once again, the case for n = 1 is easily true as s1 = √ 2 ≤ 2. Assuming the contention hold for n = k −1, then sk = q 2+ √ sk−1 ≤ √ 2+2 = 2, where the inequality above follows from the induction hypothesis.

### FINAL EXAMINATION SOLUTIONS, MAS311 REAL ANALYSIS I ...

Real Analysis Solutions1 Math Camp 2012 State whether the following sets are open, closed, neither, or both: 1. f(x;y) : 1 < x < 1;y = 0gNeither 2. f(x;y) : x;y areintegersgClosed 3. f(x;y) : x+y = 1gclosed 4. f(x;y) : x+y < 1gopen 5. f(x;y) : x = 0 ory = 0gclosed Prove the following: 1.Openballsareopensets Takeanyy 2B(x;r). Definer 2 = r d(y;x) 2. Letz beanypointinB(y;r

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[Books] Real Analysis Proofs Solutions real analysis proofs solutions Solution. • (a) We write the series as f(x) = X∞ n=2 anx n where an = (1 if n is prime, 0 if n isn’t prime. • Then |anx n| ≤ |x| for every n = 2,3,4,.... Therefore, if |x| < 1 the series converges by comparison with the con-vergent geometric series P |x|n. [Books] Real Analysis Proofs Solutions

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Solution. • (a) If x > 0, then |fn(x)| ≤ 1 1+nx → 0 as n → ∞ so fn(x) → 0. Also, fn(0) = 0 for every n, so fn(0) → 0. Thus, fn → 0 pointwise on [0,∞). • (b) We have |fn(x)| ≤ 1 1+na < 1 na for all a ≤ x < ∞, so given ǫ > 0 take N = 1/a and then |fn(x)| < ǫ for all n > N, meaning that fn → 0 uniformly on [a,∞).

### RealAnalysis Math 125A, Fall 2012 Sample Final Questions

Let x be a real number. If x <e is true for all real numbers e >0, then x 0. This statement is the general idea of what we do in analysis. Suppose next we really wish to prove the equality x = 0. In analysis, we prove two inequalities: x 0 and x 0. To prove the inequality x 0, we prove x <e for all positive e.

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### INTRODUCTION TO REAL ANALYSIS - Trinity University

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Abstract. These are some notes on introductory real analysis. They cover the properties of the real numbers, sequences and series of real numbers, limits of functions, continuity, di erentiability, sequences and series of functions, and Riemann integration. They don’t include multi-variable calculus or contain any problem sets.

**An Introduction to Real Analysis John K. Hunter**

Principles of Mathematical Analysis (International Series in Pure and Applied Mathematics). 3rd ed. McGraw-Hill, 1976. ISBN: 9780070542358. ISBN: 9780070542358. Assignment files.