

Name:

Math 321 ... Exam 3 Extra Credit (15 points)

1) Prove that  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$  for  $n = 1, 2, 3, \dots$

2) Prove all integers  $n \geq 2$  are prime or can be written as a product of primes.

3) Prove that  $f_2 + f_4 + \dots + f_{2n} = -1 + f_{2n+1}$  when  $n$  is a positive integer.