

ATPS Quiz 2
2016-17 Analysis [25 points]

_____ is inducted into the Math Hall of Fame!
Period _____

Calculators OK!! Please round all answers to 3 decimal places where appropriate.
3 points each problem (except for the induction proof, naturally)

1a) Consider an arithmetic sequence that begins with 3, and whose 30th term is 500. Write in the second and third term.

3, _____, _____,

b) Find the first term of a geometric sequence whose 2nd term is 5 and whose 50th term is 500.

c) Consider an infinite geometric sequence that starts with 8, and whose sum is 50. Write in the second and third term.

8, _____, _____,

d) The sum of the first n terms of an arithmetic series is 1550. The middle number is 10. How many terms are in the sequence?
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e) Three numbers have a geometric mean of 12 and an arithmetic mean of 30. One of them is 4. Find either of the other numbers.

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2. Solve for n : $\frac{(n-1)!(n+1)!}{n!(n-2)!} = 17$

3. Use mathematical induction to prove that the product of consecutive integers is even. In other words, that $(n)(n+1)$ is a multiple of 2. Please clearly show all of the important steps of your proof and use words/math to justify any conclusion. [7]