

## Quiz 1

Mar 06, 2014

Show all details.

1. Solve for  $x \frac{dy}{dx} + 2y = 1 - \frac{1}{x}$  on  $x > 0$  with  $y(1) = \frac{1}{2}$ .
2. State (need not prove) the integral test for series with positive terms ( $a_n > 0$ ). Then give an example of a series that can be found convergent using this test.
3. State (need not prove) the ratio test for series with positive terms ( $a_n > 0$ ). Then give an example of a series that can be found convergent using this test.
4. State (need not prove) the root test for series with positive terms ( $a_n > 0$ ). Then give an example of a series that can be found convergent using this test.  
The examples in the last 3 questions need not be different.
5. State (need not prove) the Leibniz's Theorem for alternating series. Then give an example of a conditionally convergent series.

Note: do study the proof for the midterm.

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