

Calculus 2 - Series and Sequences Worksheet

Professor:

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Office Hours:

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Before class on Wednesday 4/13, please come up with an example for each of the following mathematical items and and short explanation for why each is, in fact, an example.

1. A converging sequence.
2. A diverging sequence.
3. A converging series.
4. A diverging series.
5. A conditionally convergent alternating series other than $\sum_{n=1}^{\infty} \frac{(-1)^n}{n}$
6. An absolutely convergent alternating series other than $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^2}$
7. A series that passes the divergence test but does not converge.
8. A series that the Ratio Test would find inconclusive.
9. A converging geometric series.
10. A Taylor Series expansion for your favorite function about $x = 0$.
Show all the work for how you got the series.
11. The radius of convergence for your Taylor Series above.
Show all the work for how you got this.
12. The third order Taylor Polynomial, $P_3(x)$ for the function you used above.
13. An approximation for the value of your function at $x = 0.1$ using $P_3(0.1)$ along with the error $|E_3|$.