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## MATH 1B: CALCULUS DISCUSSION SECTION 2

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### WORKSHEET 6

Prove (make an argument!) that following series are absolutely convergent, conditionally convergent, or divergent.

(a)

$$\sum_{n=1}^{\infty} \left(1 + \frac{1}{n^3}\right)^{\pi/n+n^2}$$

(b)

$$\sum_{n=0}^{\infty} \left(\frac{2 - 3 \sin(n)}{6}\right)^n$$

(c)

$$\sum_{n=0}^{\infty} \left(\frac{n}{n+3}\right)^{n^2}$$

(d)

$$\sum_{n=0}^{\infty} \left(\sqrt[n]{2} - 1\right)$$

(e)

$$\sum_{n=1}^{\infty} (-1)^n \left(\sin\left(\frac{1}{n}\right)\right)^{1/3}$$

(f)

$$\sum_{n=0}^{\infty} \left(\frac{1}{1 + 3 \cdot (-1)^n}\right)^n$$

Classifying Tests for Convergence and Divergence

<i>Test name</i>	<i>Example of series to test</i>	<i>Conditions on series to be tested</i>	<i>Conclusions you can draw from this test</i>
<b>p-Series</b>			
<b>Geometric Series</b>			
<b>Comparison</b>			
<b>Limit Comparison</b>			
<b>Alternating Series</b>			
<b>Divergence</b>			
<b>Integral</b>			
<b>Root</b>			
<b>Ratio</b>			