

Math 1B: Discussion 3/5/19

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Question 1

Determine if the following series are geometric or not. If they are, determine if they converge or diverge, and what they converge to (if they converge).

$$\sum_{n=0}^{\infty} (-1)^n$$

$$2 + 4 + 6 + 8 + 10 + \dots$$

$$\sum_{n=1}^{\infty} \frac{3(-1)^n}{2^n}$$

$$3 - 6 + 12 - 24 + 48 - 96 + \dots$$

$$\frac{1}{3} - \frac{1}{6} + \frac{1}{12} - \frac{1}{24} + \dots$$

Question 2

Determine whether the following series converge or diverge. Use either the integral test, direct comparison test, or limit comparison test.

$$\sum_{n=1}^{\infty} \frac{\arctan(n)}{1+n^2}$$

$$\sum_{n=2}^{\infty} \frac{1}{n^{3/2}\ln(n)}$$

$$\sum_{n=2}^{\infty} \frac{1}{n(\ln(n))^{3/2}}$$

$$\sum_{n=1}^{\infty} \frac{e^{-n^2}}{1+3^n}$$

$$\sum_{n=1}^{\infty} \frac{4+\cos^2(n)}{n^3}$$

$$\sum_{n=1}^{\infty}\frac{\sqrt{n}}{3n^2-n+4}$$

$$\sum_{n=1}^\infty \frac{1}{n!}$$

$$\sum_{n=1}^\infty \frac{1}{n^n}$$

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

$$\sum_{n=1}^\infty \frac{\arctan(n)}{2\sqrt{n}-1}$$

$$2 \\$$