

1. Determine whether this series converges or diverges.

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

3. Determine whether this series converges or diverges.

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

2. Determine whether this series converges or diverges.

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

4. Determine whether this series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{5n}{n^3}$$

5. Determine whether this series converges or diverges.

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

7. Which tests can be used to conclude that a series converges? *Mark all that apply*

- (a) n^{th} Term Test
- (b) p -Series
- (c) Geometric Series Test
- (d) Alternating Series Test
- (e) Ratio Test
- (f) Limit Comparison Test
- (g) Direct Comparison Test

8. Which tests can be used to conclude that a series diverges? *Mark all that apply*

- (a) n^{th} Term Test
- (b) p -Series
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- (d) Alternating Series Test
- (e) Ratio Test
- (f) Limit Comparison Test
- (g) Direct Comparison Test

6. Determine whether this series converges or diverges.

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