

Calculus Review

Exercises

1. Find the limit or use L'Hôpital's rule if the limit is indeterminate. If the limit does not exist, give the reasons why it doesn't exist. Apply L'Hôpital's rule when appropriate.

1. $\lim_{x \rightarrow 0} \frac{3x^2 + 2x - 1}{x^2 + 1}$

2. $\lim_{x \rightarrow 0} \frac{1}{x^2}$

3. $\lim_{x \rightarrow 0} \frac{1 - 1 + 1 - 1}{x^2 + 1}$

4. $\lim_{x \rightarrow 0} x^{100}$

5. $\lim_{x \rightarrow 0} \frac{x + 1}{x^2 + 1}$

6. $\lim_{x \rightarrow 0} \frac{1 + x^2}{x^2 + 1}$

7. $\lim_{x \rightarrow 0} \sin(x)^{100}$

8. $\lim_{x \rightarrow 0} \frac{\sin(x)}{x}$

9. $\lim_{x \rightarrow 0} \frac{\cos(x)}{x^2 + 1}$

10. $\lim_{x \rightarrow 0} x \sin(1/x)$

11. $\lim_{n \rightarrow \infty} \frac{1}{n}$

12. $\lim_{n \rightarrow \infty} \frac{(n+1)^2 + 1}{n}$

13. $\lim_{n \rightarrow \infty} \cos(n \cdot \frac{\pi}{2})$

14. $\lim_{n \rightarrow \infty} \cos(n \cdot \frac{\pi}{2})$

15. $\lim_{n \rightarrow \infty} \frac{1}{n}$

16. $\lim_{n \rightarrow \infty} \frac{1}{n^2}$

17. $\lim_{n \rightarrow \infty} \frac{\sin(n \cdot \frac{\pi}{2})}{n}$

18. $\lim_{n \rightarrow \infty} \frac{1}{n^2}$

19. $\lim_{n \rightarrow \infty} \frac{1}{n}$

20. $\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^n$