

Worksheet – L'Hopital's Rule

Show that L'Hopital's Rule applies and then use it to evaluate each limit.

1.
$$\lim_{x \rightarrow 1} \frac{x-1}{x^7-1}$$

2.
$$\lim_{x \rightarrow 3} \frac{2x-6}{x^2-9}$$

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

4.
$$\lim_{x \rightarrow 0} \frac{e^x - (1-x)}{x}$$

5.
$$\lim_{x \rightarrow \infty} \frac{5x^2-3x+1}{3x^2-5}$$

6.
$$\lim_{x \rightarrow 0} \frac{\sec x - 1}{\sin x}$$

7.
$$\lim_{x \rightarrow \infty} \frac{x^2}{e^{5x}}$$

8.
$$\lim_{x \rightarrow 0} \frac{e^{6x}-1}{e^x}$$

9.
$$\lim_{x \rightarrow 0} \frac{1-\cos x}{x^3}$$

10.
$$\lim_{x \rightarrow \infty} \frac{\ln x}{x}$$

11.
$$\lim_{x \rightarrow 0} \frac{\cos x - 1}{e^x - x - 1}$$