# L'Hopital's Rule

If possible, evaluate using L'Hopital's Rule. If L'Hopital's Rule cannot solve the problem, find the limit another way.

1. $\lim_{x\to 3} \frac{2x-6}{x^2-9}$
2. $\lim_{x\to 3} \frac{\sqrt{x+1}-2}{x-3}$
3. $\lim_{x\to \infty} \frac{5x^2-3x+1}{3x^2-5}$
4. $\lim_{x\to 2} \frac{x^3-x-2}{x-2}$
5. $\lim_{x\to 0} \frac{\sqrt{4-x^2}-2}{x}$
6. $\lim_{x\to 0} \frac{e^x-(1-x)}{x}$
7. $\lim_{x\to 0} \frac{\sin 2x}{\sin 3x}$
8. $\lim_{x\to 0} \frac{\sin^{-1} x}{x}$
9. $\lim_{x\to \infty} \frac{3x^2-2x+1}{2x^2+3}$
10. $\lim_{x\to \infty} \frac{x^2+2x+1}{x-1}$
11. $\lim_{x\to \infty} \frac{x}{\sqrt{x^2+1}}$
12. $\lim_{x\to \infty} \frac{\ln x}{x}$
13. $\lim_{x\to \infty} \frac{(\ln x)^3}{x}$
14. $\lim_{x\to \infty} \frac{x^2}{e^{5x}}$
15. $\lim_{x\to 0} \frac{e^{2x}-1}{e^x}$
16. $\lim_{x\to 0} \frac{\cos x-1}{e^x-x-1}$
17. $\lim_{x\to 0} \frac{\ln(\cos(\sin x))}{x^2}$
18. $\lim_{x\to 0} \frac{1-\cos 2x}{1-\cos 7x}$
19. $\lim_{x\to 0} \frac{e^{2+x}-\sin x-e^2}{x}$
20. $\lim_{x\to 3} \frac{\sqrt{3x}-3}{\sqrt{2x-4}-\sqrt{2}}$