Indeterminant Forms using L'Hospital's Rule

1. $\frac{0}{0}$ $\lim_{x\to 0}\frac{x^2}{e^x-1}$

2. $\frac{\infty}{\infty}$ $\lim_{x\to\infty}\frac{x^2}{e^x}$

3. $\infty-\infty$ $\lim_{x\to\infty}\left(\sqrt{x^2+8x}-x\right)$

4. $0\cdot\infty$ $\lim_{x\to\infty}e^{-x}\sqrt{x}$

5. 0^0 $\lim_{x\to 0}x^{\sin x}$

6. ∞^0 $\lim_{x\to\infty}x^{\frac{1}{x}}$

7. 1^∞ $\lim_{x\to 0}\left(x+e^{2x}\right)^{\frac{1}{x}}$

8. 0^∞ $\lim_{x\to 0}x^{\frac{1}{\ln x}}$

9. 1^∞ $\lim_{x\to 0}(1+x)^{\frac{1}{x}}$

10. 1^∞ $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$

Make sure you know the method for each of the following indeterminant forms.

$\frac{0}{0};\frac{\infty}{\infty};\infty-\infty;0\cdot\infty;0^0;\infty^0;1^\infty;0^\infty$

Indeterminant Forms using L'Hospital's Rule - KEY

1.	$\frac{0}{0}$	$\lim_{x\to 0}\frac{x^2}{e^x-1}$	0
2.	$\frac{\infty}{\infty}$	$\lim_{x\to\infty}\frac{x^2}{e^x}$	0
3.	$\infty-\infty$	$\lim_{x\to\infty}\left(\sqrt{x^2+8x}-x\right)$	4
4.	$0\cdot\infty$	$\lim_{x\to\infty} e^{-x}\sqrt{x}$	0
5.	0^0	$\lim_{x\to 0} x^{\sin x}$	1
6.	∞^0	$\lim_{x\to\infty} x^{\frac{1}{x}}$	1
7.	1^∞	$\lim_{x\to 0}\left(x+e^{2x}\right)^{\frac{1}{x}}$	e^3
8.	0^∞	$\lim_{x\to 0} x^{\frac{1}{\ln x}}$	e
9.	1^∞	$\lim_{x\to 0}(1+x)^{\frac{1}{x}}$	e
10.	1^∞	$\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$	e

Make sure you know the method for each of the following indeterminant forms.

$\frac{0}{0};\frac{\infty}{\infty};\infty-\infty;0\cdot\infty;0^0;\infty^0;1^\infty;0^\infty$