

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

L'Hopital's Rule

Confirm the indeterminate form, differentiate numerator and denominator separately, and continue only while L'Hopital's Rule applies. Give an exact limit, signed infinity, or DNE.

1. exponential logarithmic

$$\lim_{x \rightarrow 2} \frac{e^{x-2} - 1}{-5 \cdot (x-2)^2}$$

Indeterminate form: _____

Exact limit: _____

2. polynomial trigonometric

$$\lim_{x \rightarrow 2} \frac{6 \cdot \sin(4 \cdot (x-2))}{6 \cdot (x-2)^2}$$

Indeterminate form: _____

Exact limit: _____

3. polynomial

$$\lim_{x \rightarrow 4} \frac{336 \cdot 1 - 228 \cdot x + 52 \cdot x^2 - 4 \cdot x^3}{-32 \cdot 1 + 16 \cdot x - 2 \cdot x^2}$$

Indeterminate form: _____

Exact limit: _____

4. trigonometric

$$\lim_{x \rightarrow 4} \frac{-3 \cdot \sin(x+4)}{3 \cdot (1 - \cos(2 \cdot (x+4)))}$$

Indeterminate form: _____

Exact limit: _____

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5. polynomial

$$\lim_{x \rightarrow +\infty} \frac{-x + 3 \cdot x^2}{2 \cdot 1 + x + 3 \cdot x^3 - 5 \cdot x^4}$$

Indeterminate form: _____

Exact limit: _____

6. trigonometric

$$\lim_{x \rightarrow 0^+} \frac{4 \cdot \tan(4 \cdot x)}{\sin(4 \cdot x)}$$

Indeterminate form: _____

Exact limit: _____

7. exponential logarithmic

$$\lim_{x \rightarrow 0^+} \frac{-6 \cdot x^3}{-4 \cdot (e^{-3 \cdot x} - 1 + 3 \cdot x)}$$

Indeterminate form: _____

Exact limit: _____

8. polynomial trigonometric

$$\lim_{x \rightarrow -3^+} \frac{-2 \cdot (x + 3)^3}{-4 \cdot \tan(x + 3)}$$

Indeterminate form: _____

Exact limit: _____