

4.5 Indeterminate Forms and L'Hospital's Rule WRITTEN

Do and show your work using the standard written style sheet format.
Work turned in on this page will not be checked.

1.

- What type of indeterminate form is $\lim_{x \rightarrow -\infty} \frac{2x^5 - 3x^2 + 7}{4x^5 - 12}$?
- Determine $\lim_{x \rightarrow -\infty} \frac{2x^5 - 3x^2 + 7}{4x^5 - 12}$ using the technique from Section 2.5.
- Determine $\lim_{x \rightarrow -\infty} \frac{2x^5 - 3x^2 + 7}{4x^5 - 12}$ using l'Hospital's Rule.

2.

- What type of indeterminate form is $\lim_{x \rightarrow 2} \frac{\ln(3-x)}{x^2 - 4}$?
- Determine $\lim_{x \rightarrow 2} \frac{\ln(3-x)}{x^2 - 4}$ using calculus.

3.

- What type of indeterminate form is $\lim_{x \rightarrow \infty} \frac{e^{x^2}}{x^4}$?
- Determine $\lim_{x \rightarrow \infty} \frac{e^{x^2}}{x^4}$ using calculus.
- What type of indeterminate form is $\lim_{x \rightarrow 0^+} x^2 \ln x^2$?
- Explain why $\lim_{x \rightarrow 0^+} x^2 \ln x^2$ is not a candidate for l'Hospital's Rule as is.
- How can you modify $\lim_{x \rightarrow 0^+} x^2 \ln x^2$ so that you can use l'Hospital's Rule to evaluate this limit? Explain why your modification now qualifies for l'Hospital's Rule.
- Determine $\lim_{x \rightarrow 0^+} x^2 \ln x^2$ using calculus.

4.

- What type of indeterminate form is $\lim_{x \rightarrow 0^+} \csc x - \cot x$?
- Explain why $\lim_{x \rightarrow 0^+} \csc x - \cot x$ is not a candidate for l'Hospital's Rule as is.
- How can you modify $\lim_{x \rightarrow 0^+} \csc x - \cot x$ so that you can use l'Hospital's Rule to evaluate this limit? Explain why your modification now qualifies for l'Hospital's Rule.
- Determine $\lim_{x \rightarrow 0^+} \csc x - \cot x$ using calculus.

5.

- What type of indeterminate form is $\lim_{x \rightarrow 0^+} x^{x^3}$?
- Explain why $\lim_{x \rightarrow 0^+} x^{x^3}$ is not a candidate for l'Hospital's Rule as is.
- How can you modify $\lim_{x \rightarrow 0^+} x^{x^3}$ so that you can use l'Hospital's Rule to evaluate this limit? Explain why your modification now qualifies for l'Hospital's Rule.
- Determine $\lim_{x \rightarrow 0^+} x^{x^3}$ using calculus.