40 Lecture - MTH101

Important Mcqs

Which of the following is an indeterminate form that can be solved using L'Hopital's rule?

a) 5/0

b) 0/5

c) 0/0

d) 5/5

Answer: c) 0/0

L'Hopital's rule can only be used for:

a) Limits of indeterminate forms

b) Limits that converge to a finite value

c) Limits that diverge to infinity

d) None of the above

Answer: a) Limits of indeterminate forms

What is the general form of L'Hopital's rule?

a) $\lim x ? ? f(x) / g(x) = \lim x ? ? f'(x) / g'(x)$

b) $\lim x ? c f(x) / g(x) = \lim x ? c f'(x) / g'(x)$

c) $\lim x ? 0 f(x) / g(x) = \lim x ? 0 f'(x) / g'(x)$

d) None of the above

Answer: b) $\lim x ? c f(x) / g(x) = \lim x ? c f'(x) / g'(x)$

Which of the following is an example of an indeterminate form ? / ??

a) $\lim x ? 0 \sin(x) / x$

b) lim x ? ? e^x / x^2

c) $\lim x ? ? \ln(x) / x$

d) None of the above

Answer: b) lim x ? ? e^x / x^2

L'Hopital's rule can be applied:

- a) Once
- b) Twice
- c) Multiple times
- d) None of the above
- Answer: c) Multiple times

Which of the following is an example of an indeterminate form 0 x ??

a) $\lim x ? ? (x + 1) / (x - 1)$

- b) lim x ? 0 (1 cos(x)) / x^2
- c) $\lim x ? ? x \ln(x)$
- d) None of the above

Answer: c) $\lim x ? ? x \ln(x)$

Which of the following is an example of an indeterminate form ? - ??

- a) lim x ? 0 (1 cos(x)) / x^2
- b) lim x ? ? x e^x
- c) $\lim x ? ? (x^2 + 1) / (x + 1)$
- d) None of the above
- Answer: b) lim x ? ? x e^x

L'Hopital's rule fails to solve indeterminate forms when:

- a) The limit is not an indeterminate form
- b) The limit is a determinate form
- c) The limit does not exist

d) None of the above

Answer: c) The limit does not exist

Which of the following is an example of an indeterminate form 0/0?

a) lim x ? 1 (x - 1) / (x^2 - 1)

b) lim x ? ? $(1 + 1/x)^x$

c) $\lim x ? 0 \ln(x) / x$

d) None of the above

Answer: a) $\lim x ? 1 (x - 1) / (x^2 - 1)$

Which of the following is an example of an indeterminate form ? / ??

a) $\lim x ? 0 \sin(x) / x$

b) lim x ? ? e^