

2022 Calculus BC Taylor Remainder Error (Rogowski 8.4 2nd Half)

Lesson 332 | Calculus BC | Taylor remainder bounds

<https://www.youtube.com/watch?v=IYDvbgjDp0A>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01 Bound the error when the degree-5 Maclaurin polynomial for e^x approximates $e^{(9/100)}$.
Use a Lagrange remainder.

02 Bound the error when the degree-6 Maclaurin polynomial for e^x approximates $e^{(12/100)}$.
Use a Lagrange remainder.

03 Bound the error when the degree-4 Maclaurin polynomial for e^x approximates $e^{(9/100)}$.
Use a Lagrange remainder.

2022 Calculus BC Taylor Remainder Error (Rogowski 8.4 2nd Half)

Lesson 332 | Calculus BC | Taylor remainder bounds

<https://www.youtube.com/watch?v=IYDvbgjDp0A>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

04

Bound the error when the degree-6 Maclaurin polynomial for e^x approximates $e^{(13/100)}$. Use a Lagrange remainder.

05

Bound the error when the degree-3 Maclaurin polynomial for e^x approximates $e^{(6/100)}$. Use a Lagrange remainder.

06

Bound the error when the degree-6 Maclaurin polynomial for e^x approximates $e^{(4/100)}$. Use a Lagrange remainder.

2022 Calculus BC Taylor Remainder Error (Rogowski 8.4 2nd Half)

Lesson 332 | Calculus BC | Taylor remainder bounds

<https://www.youtube.com/watch?v=IYDvbgjDp0A>

Original practice aligned to the saved video title.

- 01** Bound the error when the degree-5 Maclaurin polynomial for e^x approximates $e^{(9/100)}$. Use a Lagrange remainder.

On $[0, 9/100]$, the next derivative $e^x \leq e^{(9/100)}$. Thus
 $|R_5| \leq e^{(9/100)}(9/100)^6/6! \approx 8.0762372e-10$.

- 02** Bound the error when the degree-6 Maclaurin polynomial for e^x approximates $e^{(12/100)}$. Use a Lagrange remainder.

On $[0, 12/100]$, the next derivative $e^x \leq e^{(12/100)}$. Thus
 $|R_6| \leq e^{(12/100)}(12/100)^7/7! \approx 8.0159228e-11$.

- 03** Bound the error when the degree-4 Maclaurin polynomial for e^x approximates $e^{(9/100)}$. Use a Lagrange remainder.

On $[0, 9/100]$, the next derivative $e^x \leq e^{(9/100)}$. Thus
 $|R_4| \leq e^{(9/100)}(9/100)^5/5! \approx 5.3841581e-08$.

2022 Calculus BC Taylor Remainder Error (Rogowski 8.4 2nd Half)

Lesson 332 | Calculus BC | Taylor remainder bounds

<https://www.youtube.com/watch?v=IYDvbgjDp0A>

Original practice aligned to the saved video title.

04

Bound the error when the degree-6 Maclaurin polynomial for e^x approximates $e^{(13/100)}$. Use a Lagrange remainder.

On $[0, 13/100]$, the next derivative $e^x \leq e^{(13/100)}$. Thus
 $|R_6| \leq e^{(13/100)}(13/100)^7/7! \approx 1.417853e-10$.

05

Bound the error when the degree-3 Maclaurin polynomial for e^x approximates $e^{(6/100)}$. Use a Lagrange remainder.

On $[0, 6/100]$, the next derivative $e^x \leq e^{(6/100)}$. Thus
 $|R_3| \leq e^{(6/100)}(6/100)^4/4! \approx 5.7339174e-07$.

06

Bound the error when the degree-6 Maclaurin polynomial for e^x approximates $e^{(4/100)}$. Use a Lagrange remainder.

On $[0, 4/100]$, the next derivative $e^x \leq e^{(4/100)}$. Thus
 $|R_6| \leq e^{(4/100)}(4/100)^7/7! \approx 3.3834611e-14$.