Watch. Practice. Understand. | Lesson 331

2022 Calculus BC Taylor Polynomial Approximation 8 4

Watch the matching video: https://www.youtube.com/watch?v=aJICmpOoOS0

Practice focus: Taylor polynomials

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find the degree-3 Maclaurin polynomial for e^x.

02 Find the degree-3 Maclaurin polynomial for sin x.

03 Use the degree-2 Maclaurin polynomial for e^x to approximate e^0.1.

04 Find the degree-2 Taylor polynomial for ln x centered at 1.

Worked answers | Lesson 331

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Practice focus: Taylor polynomials

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01 Find the degree-3 Maclaurin polynomial for e^x.

All derivatives at 0 are 1: $1+x+x^2/2+x^3/6$.

02 Find the degree-3 Maclaurin polynomial for sin x.

Derivative values at 0 alternate 0,1,0,-1; polynomial $x-x^3/6$.

03 Use the degree-2 Maclaurin polynomial for e^x to approximate e^0.1.

$1+0.1+0.1^2/2=1.105$.

04 Find the degree-2 Taylor polynomial for ln x centered at 1.

$f(1)=0$, $f'(1)=1$, $f''(1)=-1$. Polynomial $(x-1)-(x-1)^2/2$.