

DoNow

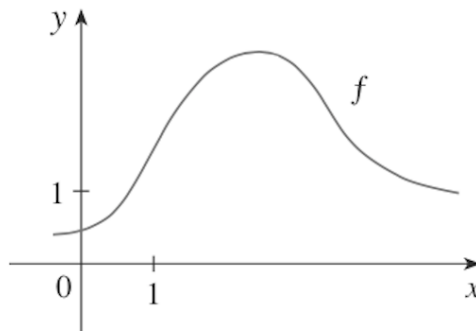
1. A graph of $f(x)$ is shown. Be sure to explain your answers.

(a) Could the third degree Taylor polynomial for $f(x)$ centered at $a = 1$ be:

$$1.6 - 0.8(x - 1) + 0.4(x - 1)^2 - 0.1(x - 1)^3$$

(b) Could the third degree Taylor polynomial for $f(x)$ centered at $a = 2$ be:

$$2.8 + 0.5(x - 2) + 1.5(x - 2)^2 - 0.1(x - 2)^3$$

**Old and New Questions**

2. (a) Demonstrate how to use Maclaurin series to evaluate $\lim_{x \rightarrow 0} \frac{x^2 e^x}{\cos x - 1}$
 (b) Explain why using just the first few non-zero terms of the series is sufficient.

3. Without consulting your notes, demonstrate how to find the first 4 non-zero terms of the Maclaurin series for each of these functions. Part (a) will require you to use compute derivatives, but most of the others can be obtained by using a previous answer.

(a) e^x

(d) $\frac{1}{1-x}$

(g) $\frac{1}{1+x^2}$

(b) $\sin(x)$

(e) $\frac{1}{1+x}$

(h) $\arctan(x)$

(c) $\cos(x)$

(f) $\ln(1+x)$