**Using the Document: Taylor\_Polynomials\_CAS.tns**

This calculator file provides a tool for generating and graphing Taylor polynomials. The degree of the Taylor polynomial is changed using the arrow clicker for , and the value for  can be changed by dragging the point on the -axis or by entering a new -coordinate in the ordered pair displayed on the graph screen.

**Suggested Applications and Extensions**

1. (a) Find the Taylor polynomials up to degree  for  centered at .

 Examine these graphs as  increases.

 (b) Evaluate  and these Taylor polynomials at , and .

 (c) Explain how the Taylor polynomials converge to .

1. Find the Taylor polynomial  for the function  centered at the number . Observe how the graphs of the Taylor polynomials change as  increases, and find an interval in which the Taylor polynomial is a good approximation to .
2. , 
3. , 
4. , 
5. , 
6. , 
7. , 
8. Find the Taylor polynomial  for the function  centered at 0. Observed how the graphs change as  increases, find an interval in which the Taylor polynomial is a good approximation to , and find .
9.  
10.  
11. , 
12. , 
13. , 
14. , 
15. Find the Taylor polynomial  for the function  centered at . Explain this result.
16. (a) Find the Taylor polynomial  for the function  centered at .

(b) Find the Taylor polynomial  for the function  centered at .

(c) Find the Taylor polynomial  for the function  centered at .

 Explain how this Taylor polynomial is related to those found in parts (a) and (b).