

1. Write the Taylor series for $f(x) = \cos(x)$ at $x = 0$.
2. Use a graphing tool to graph both $y = \cos(x)$ and the 10th degree Taylor polynomial for $\cos(x)$ on the same picture.
3. Take the derivative of the Taylor series for $\cos(x)$ term-by-term and check that it gives the Taylor series for $-\sin(x)$
4. Find the MacLaurin series for $\cos(\sqrt{x})$. What is its radius of convergence?
5. The value $\cos(\sqrt{-1})$ isn't even defined. Approximate it using your series for $\cos(\sqrt{x})$.
Use the Taylor series for e^x to show that $\cos(\sqrt{-1}) = \frac{1}{2}(e + e^{-1})$.