Find the Maclaurin series for

f(x) = sin2x.

$$7 + \frac{(x-2)^2}{3^2 \cdot 2!} + \frac{3!(x-2)^4}{3^4 \cdot 4!}$$

Find the Taylor series for $f(x) = e^{-2x}$ about $x = 0$.

$$2x - \frac{8x^3}{3!} + \frac{32x^5}{5!} - \ldots$$

Given f(x) = $\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n}}{(2n)!}$ find a power series for f'(x).

$$1-2x+\frac{4x^2}{2!}-\frac{8x^3}{3!}+\frac{16x^4}{4!}-\ldots$$

Write a power series, centered at 1, for the function $f(x) = \frac{3}{3-x}$ and then find the interval of convergence.

$$\sum_{n=1}^{\infty} \frac{(-1)^n x^{2n-1}}{(2n-1)!}$$

For what values of x does the series $\sum_{n=0}^{\infty} \frac{2^n (x-4)^n}{n}$ converge?

$$(-1,3)$$

Find the radius of convergence for the power series $\sum_{n=0}^{\infty}\left(\frac{2x}{3}\right)^{n}$

$$\frac{7}{2} \leq x < \frac{9}{2}$$

Find the third-degree Taylor polynomial centered at 0 for the function $f(x) = e^{2x} + 3x$.

$$\frac{3}{2}$$

If $f(x) = e^{-x^2} = 1 - x^2 + \frac{x^4}{2!} - \frac{x^6}{3!} + \ldots$

Write the first four nonzero terms of the

Taylor series for $\int_0^x e^{-t^2}\,dt$ about x = 0.

$$1 + 5x + 2x^2 + \frac{4}{3}x^3$$

Use the 4th degree Taylor Series for cosx about x = 0 to determine whether f has a relative minimum, relative maximum, or neither at x = 0.

$$x - \frac{1}{3}x^3 + \frac{1}{10}x^5 - \frac{1}{42}x^7$$

Let f be a function with derivatives of all orders and for which f(2) = 7. When n is odd, the nth derivative of f at x = 2 is 0. When n is even, and n≥2, the nth derivative of f at x = 2 is given by $f^{(n)}(2) = \frac{(n-1)!}{3^n}$. Write a fourth degree Taylor polynomial for f about x = 2.

relative maximum