Find the power series expansion for f(x) at x<sub>0</sub> = 0.
1.1 f(x) = sin(x)

1.2 
$$f(x) = \cos(x)$$
 Hint:  $\frac{d}{dx}\sin(x) = \cos(x)$ 

2. 2.1 Find the power series expansion for  $sin(x^2)$ 

2.2 Use this to find 
$$\int \sin(x^2) dx$$
  
2.3 Approximate  $\int_0^1 \sin(x^2) dx$  accurate within  $10^{-1}$ 

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Math 104 Calculus II

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Use series to approximate the value of the following integrals accurate within 0.001.

$$1. \int_0^1 \cos(x^3) \ dx$$

2. 
$$\int_{0}^{1/4} \frac{1}{1+x^{4}} dx$$
 Hint:  $\frac{1}{1+x^{4}} = \frac{1}{1-(-x^{4})}$   
3.  $\int_{0}^{1} xe^{x^{3}} dx$ 

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DQC

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