

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. $\int_0^1 xe^{x^3} dx$