

Exam 1 Review

1) Compute the following integrals:

a) $\int \sqrt{16-5x^2} dx$

b) $\int \frac{x^3 + 2x^2 + 1}{x^2 - 1} dx$

c) $\int \cos^3(5x) \sin^7(5x) dx$

d) $\int \frac{6x^2 + 4x}{x^3 + x^2 + 1} dx$

e) $\int \sin(\ln x) dx$

f) $\int \frac{x}{\sqrt{x^2-7}} dx$

g) $\int \frac{x^3 + 2}{1+x^2} dx$

h) $\int \frac{x+1}{(x-1)(x^2+1)} dx$

i) $\int \frac{\sin(\ln x)}{x} dx$

j) $\int x^2 e^x dx$

k) $\int_0^{\infty} e^{-\sqrt{x}} dx$

l) $\int_0^3 \frac{dx}{\sqrt{9-x^2}}$

m) $\int \cos^3 x e^{\sin x} dx$

n) $\int_{-1}^1 \frac{1}{x^{1/3}} dx$

2) Decide if the following integrals converge:

a) $\int_1^{\infty} \frac{x}{(x^5+x+1)^{1/2}} dx$ b) $\int_0^1 \frac{dx}{x^3-x^2}$

3) Let $f(x) = e^{-x}$. How large does n need to be to guarantee that T_n for $\int_0^{10} e^{-x} dx$ is accurate to within 0.005?