

Compute the following integrals:

1.

$$\int \sqrt{1-x^2} dx$$

2.

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

3. Consider the following integral:

$$\int_0^1 \frac{1}{x^a} dx$$

For the following values of a , determine whether the integral is convergent or not. If convergent, compute the integral.

a	Convergent?	Value if convergent
3		
2		
1		
1/2		
0		