

# 1 Trigonometric Substitutions

Evaluate each of the following integrals.

1.  $\int \frac{\sqrt{x^2-1}}{x^4} dx$

2.  $\int_0^3 \frac{x}{\sqrt{36-x^2}} dx$

3.  $\int_0^2 \frac{dt}{\sqrt{4+t^2}}$

4.  $\int \frac{x}{\sqrt{1+x^2}} dx$

5.  $\int x\sqrt{1-x^4} dx$

## 2 Partial Fraction Decomposition

Evaluate each of the following integrals.

1.  $\int \frac{3t-2}{t+1} dt$

2.  $\int \frac{y}{(y+4)(2y-1)} dy$

$$3. \int_1^2 \frac{x^3+4x^2+x-1}{x^3+x^2} dx$$

$$4. \int \frac{z^2-z+6}{z^3+3z} dz$$