

Evaluate the following integrals. Show all work.

For problems 1 through 6, use the method of trigonometric substitution.

1. $\int \frac{1}{\sqrt{3-z^2}} dz$ 2. $\int \frac{t^2}{9+t^2} dt$

3. $\int \frac{\sqrt{4-x^2}}{x} dx$ 4. $\int \frac{1}{(5+t^2)^2} dt$

5. $\int \frac{x^3+x^2+x-1}{x^2+2x+2} dx$ 6. $\int t(t^2 + 25)^{1/2} dt$

For problems 7 through 10, use the method of partial fraction.

7. $\int \frac{t^2+2t-1}{t^3-9t} dt$ 8. $\int \frac{du}{u^3+u} du$

9. $\int \frac{4x^2+1}{x(x-2)^2} dx$ 10. $\int \frac{x^3-2x^2-7x+1}{x^2-4x} dx$