Directions: Show all work and simplify your answers. Evaluate the following integrals:

1.

$$\int_0^{\sqrt{2}} \frac{dx}{(4-x^2)^{3/2}}$$

2.

$$\int \frac{\sqrt{y^2-2}}{y}$$

3.

$$\int \frac{8}{4x^2 + 1} \, dx$$

4.

$$\int \frac{x^2}{\sqrt{9 - x^2}} \, dx$$