

EXAMPLE 1**Integration by Tables**

Find $\int \frac{dx}{x\sqrt{x-1}}$.

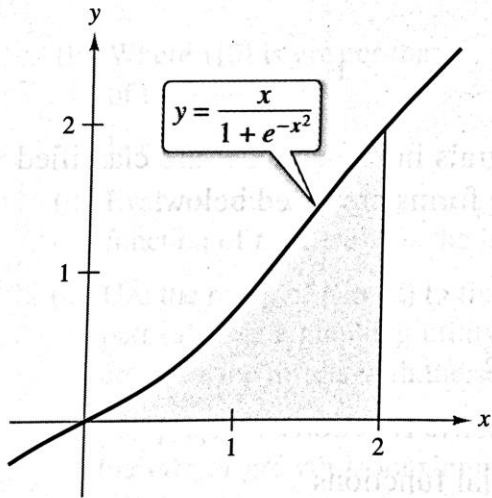
EXAMPLE 2**Integration by Tables**

⋮⋮⋮▶ See LarsonCalculus.com for an interactive version of this type of example.

Find $\int x\sqrt{x^4 - 9} dx$.

EXAMPLE 3**Integration by Tables**

Evaluate $\int_0^2 \frac{x}{1+e^{-x^2}} dx.$

**Figure 8.14**

EXAMPLE 4**Using a Reduction Formula**

Find $\int x^3 \sin x \, dx$.

EXAMPLE 5**Using a Reduction Formula**

s Find $\int \frac{\sqrt{3-5x}}{2x} dx$.

EXAMPLE 6**Integration by Tables**

Find $\int \frac{\sin 2x}{2 + \cos x} dx.$

Substitution for Rational Functions of Sine and Cosine

For integrals involving rational functions of sine and cosine, the substitution

$$u = \frac{\sin x}{1 + \cos x} = \tan \frac{x}{2}$$

yields

$$\cos x = \frac{1 - u^2}{1 + u^2}, \quad \sin x = \frac{2u}{1 + u^2}, \quad \text{and} \quad dx = \frac{2 du}{1 + u^2}.$$