18 $x^{2/3} + y^{2/3} = 1$

$$y^{2/3} = 1 - x^{2/3}$$

$$y = \left(1 - x^{2/3}\right)^{3/2}$$

$$\frac{dy}{dx} = \frac{3}{2}\left(1 - x^{2/3}\right)^{1/2}\left(-\frac{2}{3}x^{-1/3}\right)$$

$$(y')^2 = \frac{9}{4}\left(1 - x^{2/3}\right)\cdot\left(\frac{4}{9}x^{-2/3}\right)$$

$$= \frac{1 - x^{2/3}}{x^{2/3}} = x^{-2/3} - 1$$

$$(y')^2 + 1 = x^{-2/3}$$

$$\sqrt{x^{-2/3}} = x^{-1/3}$$

$$4\int_0^1 x^{-1/3}\,dx = 4\cdot\frac{3}{2}x^{2/3}\Big|_0^1$$

$$= 4\cdot\frac{3}{2} = 6$$

11 $y = \frac{1}{4}x^4 \quad [1, 2]$

$y' = x^3 \quad (y')^2 = x^6 \quad (y')^2 + 1 = x^6 + 1$

$$\int_1^2 \sqrt{x^6 + 1}\, dx$$

$$\frac{1}{2} \cdot \frac{1}{5} \left(\sqrt{1^6 + 1} + 2\sqrt{1.2^6 + 1} + 2\sqrt{1.4^6 + 1} + 2\sqrt{1.6^6 + 1} + 2\sqrt{1.8^6 + 1} + \sqrt{2^6 + 1} \right)$$

$$\int \sec x \, dx = \int \sec x \cdot \frac{\sec x + \tan x}{\sec x + \tan x} \, dx$$

$$= \int \frac{\sec^2 x + \sec x \tan x}{\tan x + \sec x} \, dx \qquad \int \frac{du}{u}$$

$$u = \tan x + \sec x$$

$$= \ln \left| \tan x + \sec x \right|$$