

7.4

$$(19) L = \int_1^4 \sqrt{1 + \left(\frac{1}{4x}\right)^2} dx$$



(1,1)

$$\sqrt{\left(\frac{dy}{dx}\right)^2} = \sqrt{\frac{1}{4x}}$$

$$\frac{dy}{dx} = \frac{1}{2\sqrt{x}}$$

$$\int dy = \int \frac{1}{2} x^{-1/2} dx$$

$$y = \sqrt{x} + C$$

$$1 = \sqrt{1} + C$$

$$0 = C$$

$$y = \sqrt{x}$$

$$25) f(x) = x^{1/3} + x^{2/3} \quad 0 \leq x \leq 2$$

$$f'(x) = \frac{1}{3}x^{-2/3} + \frac{2}{3}x^{-1/3}$$

$$s = \int_0^2 \sqrt{1 + \left[\frac{1}{3}x^{-2/3} + \frac{2}{3}x^{-1/3}\right]^2} dx$$

$$s = \int_0^{2^{1/3} + 2^{2/3}} \sqrt{1 + \dots} dy$$

$$-y = (x^{1/3})^2 + x^{1/3} - y = 0$$

$$x^{1/3} = \frac{-1 \pm \sqrt{1 - 4(1)(-y)}}{2}$$

$$x = \left( \frac{-1 \pm \sqrt{1 + 4y}}{2} \right)^3$$

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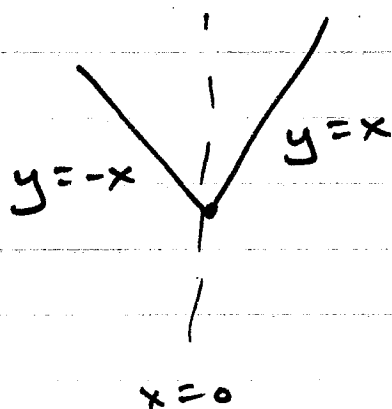
$$f(x) = x^{1/3} + x^{2/3}$$

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

$$0 = (x^{1/3})^2 + (x^{1/3}) - y$$

$$x = \left( \frac{-1 + \sqrt{1+4y}}{2} \right)^3$$

$$x' = \left[ 3 \left( \frac{-1 + \sqrt{1+4y}}{2} \right)^2 \left[ \frac{1}{4} (1+4y)^{-1/2} [4] \right] \right]^3$$



$$7) y = \int_0^x \tan t \, dt, \quad 0 \leq x \leq \frac{\pi}{6}$$

$$s = \int_0^{\frac{\pi}{6}} \sqrt{1 + [\tan x]^2} \, dx$$