

4E. Parametric equations

$$2) x^2 - y^2 = 4$$

$$3) (x-1)^2 + (y-4)^2 = 1$$

$$8) x = t \sin\left(\frac{\pi}{6}t\right) \quad y = t \cos\left(\frac{\pi}{6}t\right)$$

4F. Arc length

$$1d) \int_1^2 (1+x^2) dx = 10/3$$

$$4) \int_0^2 (4+9t^2)t^{1/2} dt = (1/27)(4+9t^2)^{3/2} \Big|_0^2$$

$$5) \int_1^2 \sqrt{2+2/t^4} dt$$

$$8) \int_0^{10} \sqrt{2} e^t dt = \sqrt{2}(e^{10}-1)$$

4G. Surface Area

$$2) 2\pi\sqrt{5} \int_0^{1/2} (1-2u) du = \sqrt{5}\pi/2$$

$$5) \int_0^2 2\pi\sqrt{y+1/4} dy = 13\pi/3$$