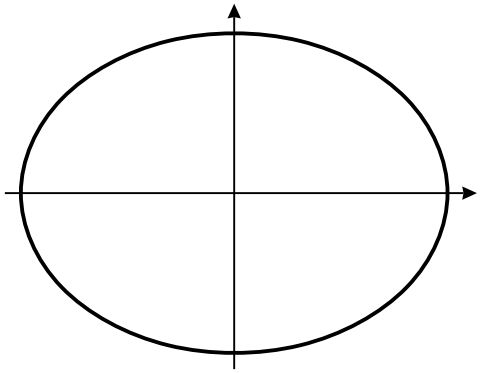
1 Stewart, section 4.9: #3, 13, 14, 43, 44, 51, 61, 63, 73, 77

2 Stewart, section 5.1: #2, 3, 11, 14, 15, 17, 21, 22, 26

3 Stewart, section 5.2: #3, 5, 7, 9, 17, 34(a,b), 40, 48, 53, 57

4 The equation $\frac{x^2}{16} + \frac{y^2}{9} = 1$ defines an ellipse, which is graphed to the right. In this exercise we will approximate the area of the ellipse.



a) Explain why we need only find the area of the part of the ellipse lying in the First Quadrant.

b) Find the function $y = f(x)$ that gives the curve bounding the top of the ellipse.

c) Use $\Delta x = 1$ and midpoints to approximate the area of the part of the ellipse lying in the First Quadrant.

d) Approximate the total area of the ellipse.

5 For the following problems, the units of a variable are given along with the units for a function (or two functions). Give the units of each definite integral.

a) x is 'seconds,' $f(x)$ is 'feet/second.' Then $\int_a^b f(x)\,dx$ is _____.

b) t is 'seconds,' $g(t)$ is 'feet/second^2.' Then $\int_a^b g(t)\,dt$ is _____.

c) x is 'days,' $f(x)$ is 'degrees F.' Then $\int_a^b f(x)\,dx$ is _____.

d) x is 'hours,' $g(x)$ is 'kilowatts.' Then $\int_a^b g(x)\,dx$ is _____.

e) L is 'meters,' $f(L)$ is 'square meters.' Then $\int_a^b f(L)\,dL$ is _____.

f) t is 'minutes,' $g(t)$ is 'gallons/foot,' and $v(t)$ is 'feet/minute.'
Then $\int_a^b g(t)v(t)\,dt$ is _____.

g) s is 'seconds,' $f(s)$ is 'feet/second.' Then $\int_a^b f^2(s)\,ds$ is _____.

h) x is 'days,' $f(x)$ is 'pounds.' Then $\int_a^b \frac{1}{f(x)}\,dx$ is _____.

i) x is 'inches,' $A(x)$ is 'square inches,' and $d(x)$ is 'pounds per cubic inch.' Then $\int_a^b A(x)d(x)\,dx$ is _____.

j) x is 'meters,' $f(x)$ is 'square meters.' Then $\int_a^b f(x)\,dx$ is _____.

k) x is 'days,' $f(x)$ is 'flu cases per day.' Then $\int_a^b f(x)\,dx$ is _____.