

1.) Find the average value of the function over the given interval.

a.) $y = \sin x$ for $x = 0$ to $x = \pi$

b.) $y = \cos x$ for $x = 0$ to $x = 2\pi$

c.) $y = \sec^2 2x$ for $x = 0$ to $x = \pi/6$

2.) Find the area of the region lying between the graphs of

a.) $y = \sin x$ and $y = 1/2$ on the interval $[0, \pi]$.

b.) $y = \sin x$ and $y = \cos x$ on the interval $[\pi/4, 5\pi/4]$.

3.) Find the area of the region bounded by the graphs of

a.) $x = y^2$ and $x = 9$.

b.) $x = y^2$ and $x = y + 2$.

c.) $x = y(y - 2)$ and $x = y(1 - 2y)$.