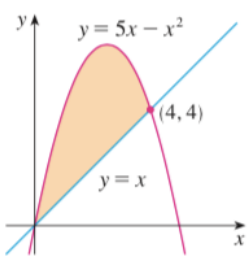
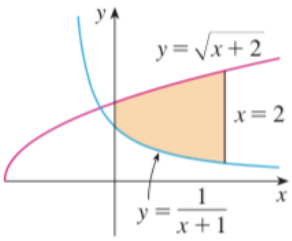
Lab worksheet for Tuesday, 23 March 2021

Practice: Areas between curves

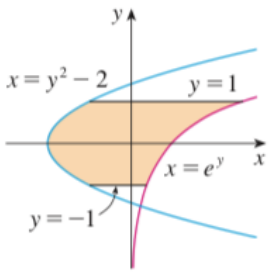
Exercise 1: Set up an integral to compute the area of the shaded region.



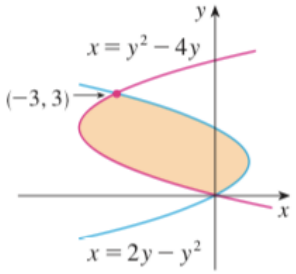
a)



b)



c)



d)

Exercise 2:

a) Set up an integral to compute the area of the region bounded by $y = sin\ x$, $y = e^x$, $x = 0$, and $x = \frac{\pi}{2}$.

b) Set up an integral to compute the area of the region bounded by two parabolas $y = x^2$ and $y = 2x - x^2$.

c) Set up an integral to compute the area of the region bounded by $y = sin\ x$ and $y = cos\ x$, $x = 0$, and $x = \frac{\pi}{2}$.

d) Set up an integral to compute the area of the region bounded by the line $y = x - 1$ and the parabola $y^2 = 2x + 6$.

Exercise 3:

a) Set up an integral to compute the area of the region bounded by $y = x^2$ and $y^2 = x$.

b) Set up an integral to compute the area of the region bounded by $y = x^3 - x$ and $y = 3x$.

c) Set up an integral to compute the area of the region bounded by $y = |x|$ and $y = x^2 - 2$.

d) Set up an integral to compute the area of the region bounded by $y = 3x^2$, $y = 8x^2$ and $4x + y = 4$