Math 112 Chapter 5.5: Substitution Rule

MORE EXAMPLES:

$$\int \frac{x}{\sqrt{x+3}} \, dx$$

$$\int \frac{x}{1+x^4} \, dx$$

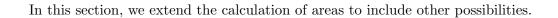
EXERCISES:

$$\int \tan^2 \theta \sec^2 \theta \, d\theta$$

$$\int_{1}^{2} \frac{1}{x^3} \sin\left(\frac{\pi}{x^2}\right) dx$$

$$\int \frac{\arcsin x}{\sqrt{1-x^2}} \, dx$$

Math 112 Chapter 6.1: Areas



EXAMPLES:

1. Find the area bounded by x = 0, x = 1, y = x, and $y = e^x$.

2. Find the area bounded by y = 1, and $y = \cos \pi x$, between x = 0 and x = 2.

3. Find the area bounded by $x = -\frac{1}{2}$, $x = \frac{1}{2}$, $y = 1 - x^2$, and $y = 2 + \frac{1}{\sqrt{1 - x^2}}$.

4. Find the area bounded by y = x and $y = (x - 2)^2$.

5. Find the area bounded by $y = x\sqrt{4-x^2}$, and $y = -x\sqrt{4-x^2}$

In some cases upper and lower boundaries change as a function of x.

6. Find the area bounded by $y = \sin x$, and $y = \cos x$, between x = 0 and $x = \pi/2$.

In some cases it may be simpler to divide the area horizontally, and construct an integral in y.

7. Find the area bounded by $y = \ln x$, and $x = y^2 - 2$, y = -1 and y = 1.

8. Find the area bounded by $x = 2y^2$ and $x = 4 + y^2$.