Name: _____

Area of a Region between Two Curves

Exercise 1: Find the area between *x*-axis and the curve

1) $y = -x^2 - 2x, \quad -3 \le x \le 2$

2) $y = -x^3 - x^2 + 2x, \quad -2 \le x \le 1$

3) $y = -x^3, \quad -1 \le x \le 3$

4) $y = \sqrt{x} + 1, \quad [0,4]$

Exercise 2: Find the area bounded by the curves

1) $y = x^2, y = x, \quad x = -1, x = 1$

2) $y = (x-1)^3, \ y = x - 1, \quad [0,2]$

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

4) $y = x^2 - 30, y = 10 - 3x$

Exercise 3: Find the area and sketch the graphs

a. Under the curve $y = x^2 + 2$ between the interval $[-1,5]$

b. Find the area under the line $y = \frac{1}{2}x + 2$, above the parabola $y = x^2$, between the y axis and the line x=1

Exercise 4: Find the area of the region bounded by the parabola $y = x^2$ and the line y=x+2

Exercise 5: Determine the area of the region between the graphs of $y = 2 - x^2$ and y = x

Exercise 6: Determine the area of the region bounded by the graphs of $y = x^2 + 3$, $y = -2x$, x = 0, and *x = 1*.

Exercise 7: Determine the area of the region between the graphs of $f(x) = 5x^3 - 2x^2 - 18x$ and $g(x) = 27x - 2x^2$.

Exercise 8: Find the area bounded by y = x^2 − 4, the *x*-axis and the lines *x* = -1 and *x* = 2.

Exercise 9: What is the area bounded by the curve y = x^3, x = -2 and x = 1?

Exercise 10: Find the area of the region bounded by the curve $y = \sqrt{x-1}$ the y-axis and the lines y = 1 and y = 5.

Exercise 11: Find the area underneath the curve y = x^2 + 2 from x = 1 to x = 2.

Exercise 12: Find the area between the curves y = x^2 + 5x and y = 3 − x^2 between x = -2 and x = 0.

Exercise 13: Find the area bounded by y = x^3, x = 0 and y = 3.

Exercise 14: Find the area bounded by the curves y = x^2 + 5x and y = 3 − x^2.

Exercise 15: Find the area bounded by the curves y = x^2, y = 2 − x and y = 1.