

Calculus Review Unit 3 page 1 \_\_\_\_\_

Approximate each of the given integrals using  $S_L$ ,  $S_U$ , and  $S_M$ . Show your work neatly organized. In each case, let  $n = 5$ .

1.  $\int_1^4 x^2 dx$

$S_L =$  \_\_\_\_\_

$S_U =$  \_\_\_\_\_

$S_M =$  \_\_\_\_\_

2.  $\int_1^9 \sqrt{x} dx$

$S_L =$  \_\_\_\_\_

$S_U =$  \_\_\_\_\_

$S_M =$  \_\_\_\_\_

## Calculus Review Unit 3 page 2

Integrate each of the following.

3.  $\int (2x^2 + 3x - 7) dx =$  \_\_\_\_\_

4.  $\int \sqrt[3]{x} dx =$  \_\_\_\_\_

5.  $\int (x + 3)^3 dx =$  \_\_\_\_\_

6.  $\int \sqrt{x}(2x + 3) dx =$  \_\_\_\_\_

Evaluate each of the following (exact values please). Show all of your work neatly organized.

7.  $\int_{-1}^2 (4x + 3) dx =$  \_\_\_\_\_

8.  $\int_1^{25} \sqrt{x} dx =$  \_\_\_\_\_

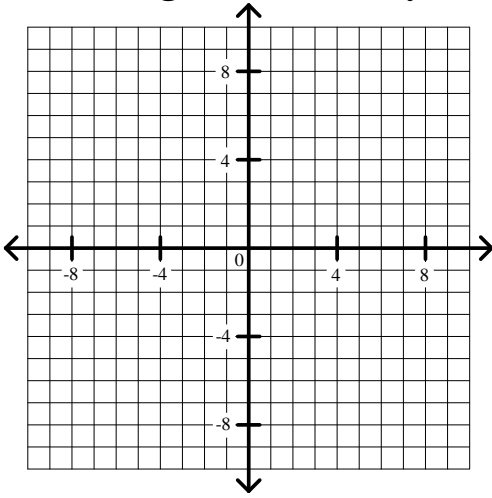
9.  $\int_{-3}^0 (2x^2 - 4x + 5) dx =$  \_\_\_\_\_

10.  $\int_{-2}^1 (3x - 2)^2 dx =$  \_\_\_\_\_

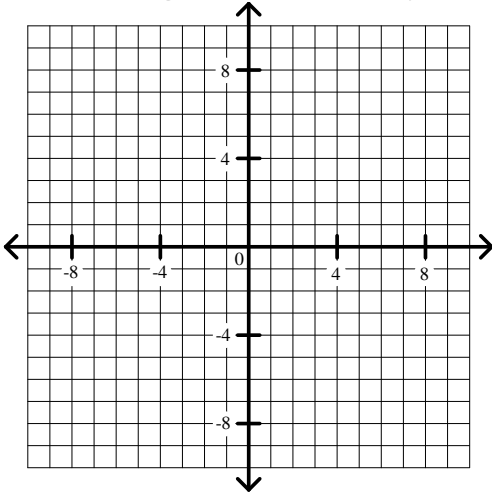
## Calculus Review Unit 3 page 3

For each of the following problems you must (a) sketch a graph of the region described, and (b) find the area of the region.

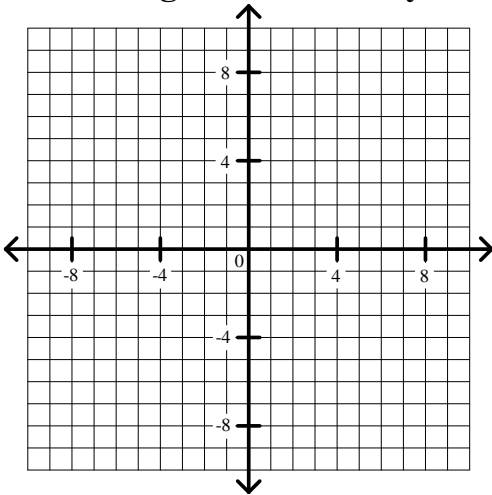
11. the region bounded by the x-axis, the lines  $x = -1$  and  $x = 2$ , and the curve  $y = x^2 + 1$ .



12. the region bounded by the x-axis and the curve  $y = x^2 - 2x - 3$ .



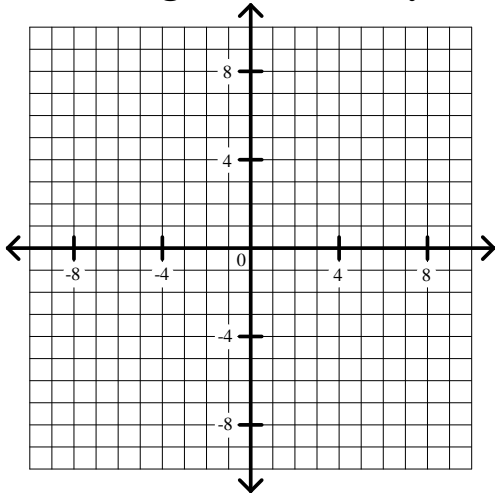
13. the region bounded by the line  $y = 2x - 3$  and the curve  $y = 2x^2 - 4x - 3$ .



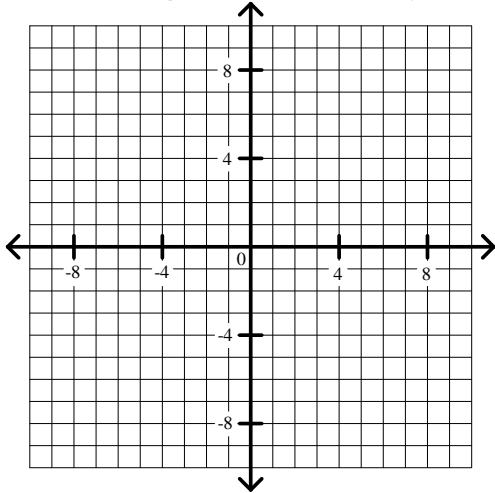
## Calculus Review Unit 3 page 4

For each of the following problems you must (a) sketch a graph of the region described, and (b) find the volume of the solid formed when this region is revolved about the x-axis.

14. the region bounded by the x-axis, the line  $x = 2$ , and the curve  $y = x^2$



15. the region bounded by the x-axis, the y-axis, and the line  $x + 2y = 8$



16. the region bounded by the x-axis, the lines  $x = 1$  and  $x = 4$ , and the curve  $y = \sqrt{x}$

