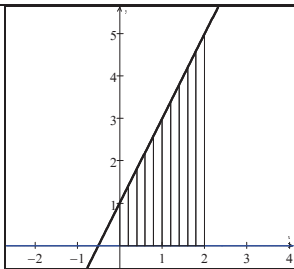
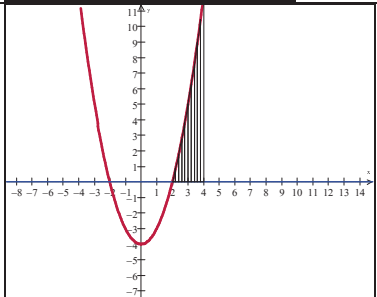


## Calculus Worksheet #42

### Examples:

<p>1) <math>f(x) = 2x + 1</math>; <math>a = 0</math>, <math>b = 2</math></p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <math display="block">\int_0^2 (2x + 1) dx = x^2 + x \Big _0^2 = (4 + 2) - 0 = \boxed{6}</math> </div>	
<p>2) <math>f(x) = x^2 - 4</math>; <math>a = 2</math>, <math>b = 4</math></p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <math display="block">\int_2^4 (x^2 - 4) dx = \left[ \frac{x^3}{3} - 4x \right]_2^4 = \left( \frac{64}{3} - 16 \right) - \left( \frac{8}{3} - 8 \right) = \boxed{\frac{32}{3}}</math> </div>	

### In Exercises 1 – 8 Graph and find the area under the graph of $f$ from $a$ to $b$

1. $f(x) = x + 1$ ; $a = 0$ , $b = 3$	2. $f(x) = 4 - x$ ; $a = -1$ , $b = 2$
3. $f(x) = 4 - x^2$ ; $a = -2$ , $b = 2$	4. $f(x) = 4x - x^2$ ; $a = 0$ , $b = 4$
5. $f(x) = \cos x$ ; $a = -\frac{\pi}{2}$ , $b = \frac{\pi}{2}$	6. $f(x) = \sin x$ ; $a = \frac{\pi}{6}$ , $b = \frac{\pi}{3}$
7. $f(x) = e^{2x}$ ; $a = 0$ , $b = 1$	8. $f(x) = e^x$ ; $a = -1$ , $b = 1$

### In Exercises 9 – 13 Graph and find the area of the region described.

9. Bounded by the $x$ -axis and the parabola $y = 4 - x^2$	
10. Bounded by the $x$ -axis and the parabola $y = 4x - x^2$	
11. Bounded by the curve $y = \sqrt{x}$ and the lines $x = 4$ and $y = 0$	
12. Lying in the first quadrant and bounded by the curves $y = \sin x$ , $y = 1$ , and $x = 0$	
13. Bounded by the parabola $y = x^2$ and the line $y = x + 2$	
14. $\int_{-2}^1 x dx =$	15. $\int_{-4}^0 (x + 2) dx =$

### Answers:

1. $\frac{15}{2}$	2. $\frac{21}{2}$	3. $\frac{32}{3}$	4. $\frac{32}{3}$	5. 2	6. $\frac{\sqrt{3}-1}{2}$	7. $\frac{e^2-1}{2}$	8. $\frac{e^2-1}{e}$
9. $\frac{32}{3}$	10. $\frac{32}{3}$	11. $\frac{16}{3}$	12. $\frac{\pi}{2} - 1$	13. $\frac{9}{2}$	14. $\frac{-3}{2}$	15. 0	