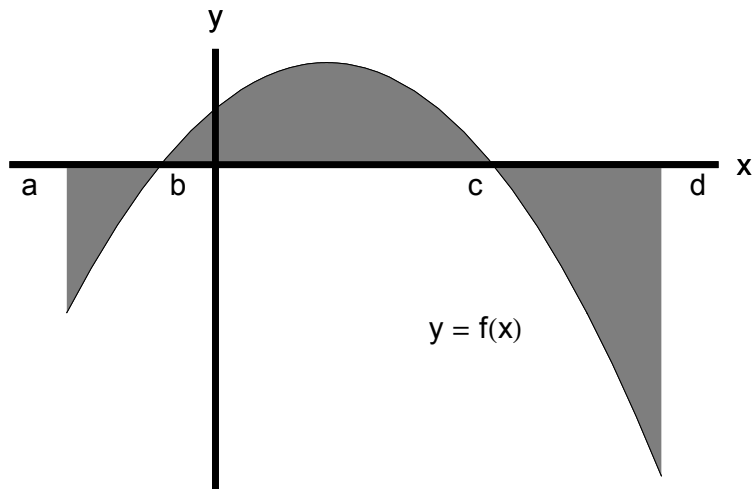


AP Calculus AB**Section 3.4: Applications of Integrals****Worksheet 14a: Area of a Region**

Problems 1 - 6 refer to the figure below. Set up definite integrals that represent the indicated shaded areas over the given intervals.



1. Over interval $[a, b]$

2. Over interval $[b, c]$

3. Over interval $[c, d]$

4. Over interval $[a, c]$

5. Over interval $[b, d]$

6. Over interval $[a, d]$

Find the area bounded by the graphs of the indicated equations over the given intervals (when stated). Write the definite integral(s) that represents the area and evaluate using the Fundamental Theorem of Calculus.

7. $y = -x, y = 0, -2 \leq x \leq 1$

8. $y = -x + 1, y = 0, -1 \leq x \leq 2$

9. $y = x^2 - 4, y = 0, 0 \leq x \leq 3$

10. $y = 4 - x^2, y = 0, 0 \leq x \leq 4$

11. $y = 4 - x^2, y = 0, -3 \leq x \leq 4$

12. $y = x^2 - 4, y = 0, -4 \leq x \leq 3$