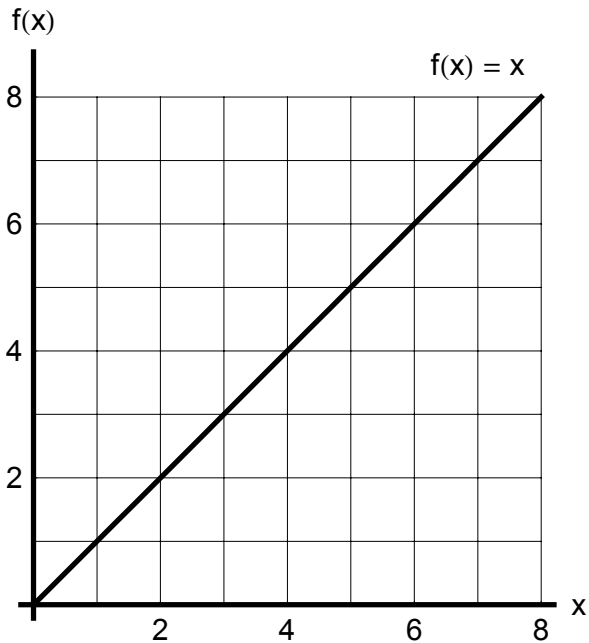
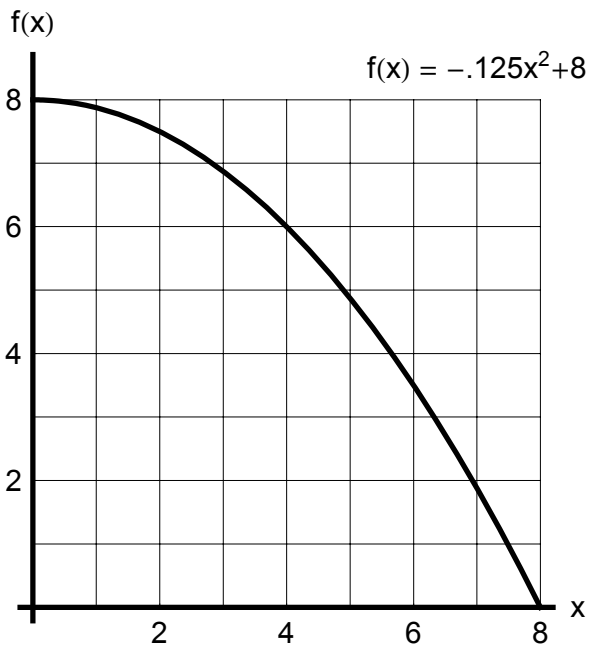


AP Calculus AB**Section 3.1: Concepts of the Definite Integral****Worksheet 11a: Left- and Right-Hand Sums**

1. Estimate the area between the graph of $f(x) = x$, the x-axis, and the vertical lines $x = 2$ and $x = 6$ using left and right sums. Use two and four subdivisions for each estimate.

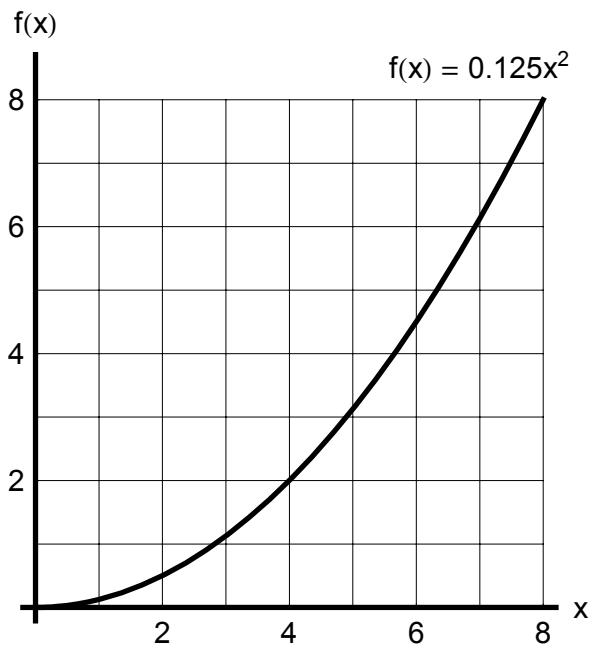


2. Estimate the area between the graph of $f(x) = -0.125x^2 + 8$, the x-axis, and the vertical lines $x = 2$ and $x = 6$ using left and right sums. Use two and four subdivisions for each estimate.

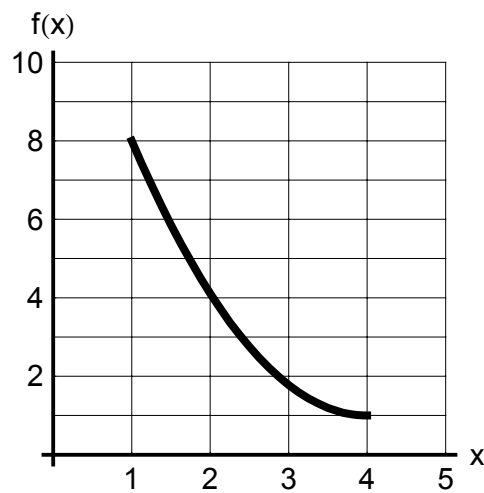
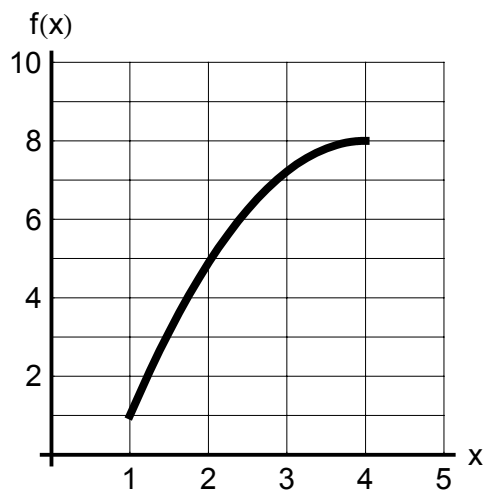


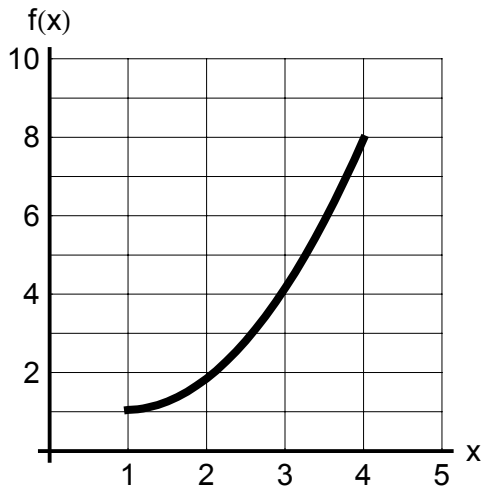
3. Estimate the area between the graph of $f(x) = 0.125x^2$, the x-axis, and the vertical lines $x =$

2 and $x = 6$ using left and right sums. Use two and four subdivisions for each estimate

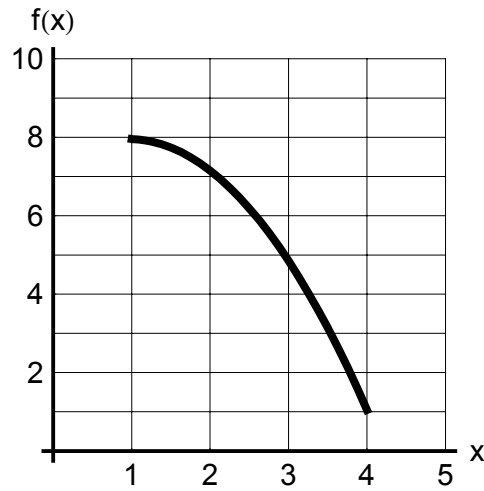


Problems 4 - 7 involve estimating the area under the curves in figures A - D from $x = 1$ to $x = 4$. For each figure divide the interval $[1, 4]$ into three equal subintervals.





(C)



(D)

4. Draw in left and right rectangles for Figures A and B.
5. Draw in left and right rectangles for Figures C and D.
6. Using the results of Problem 4, compute $\text{Left}[3]$ and $\text{Right}[3]$.

7. Using the results of Problem 5, compute $\text{Left}[3]$ and $\text{Right}[3]$.