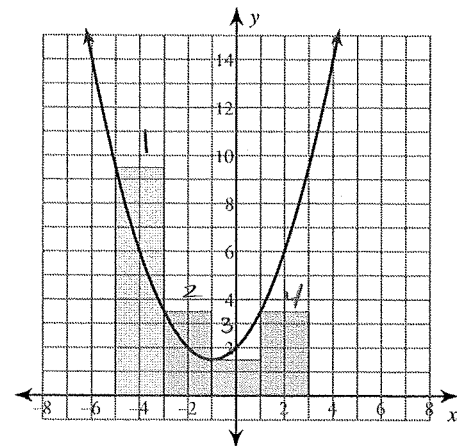


Approximating Area Under a Curve

For each problem, approximate the area under the curve over the given interval using 4 left endpoint rectangles.

L RAM

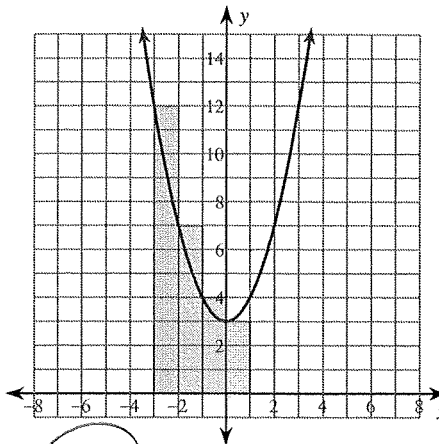
1)  $y = \frac{x^2}{2} + x + 2; [-5, 3]$



Rect l.w  
 1:  $2(9.5) = 19$   
 2:  $2(3.5) = 7$   
 3:  $2(1.5) = 3$   
 4:  $2(3.5) = 7$   
36

36

2)  $y = x^2 + 3; [-3, 1]$



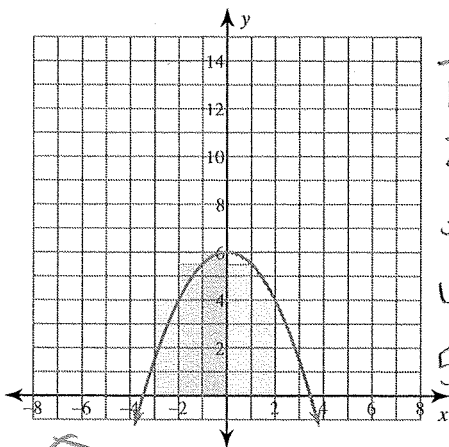
Rect l.w  
 1:  $1(12) = 12$   
 2:  $1(7) = 7$   
 3:  $1(4) = 4$   
 4:  $1(3) = 3$   
26

26

For each problem, approximate the area under the curve over the given interval using 5 right endpoint rectangles. You may use the provided graph to sketch the curve and rectangles.

R RAM

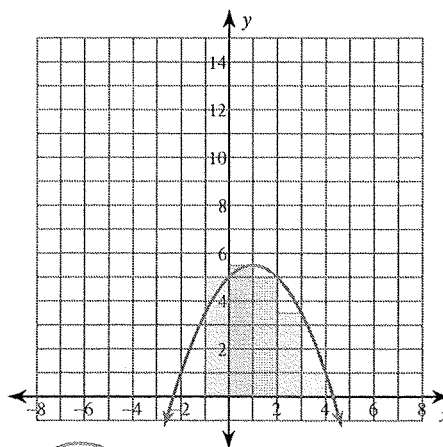
3)  $y = -\frac{x^2}{2} + 6; [-3, 2]$



Rect  
 1:  $1(4) = 4$   
 2:  $1(5.5) = 5.5$   
 3:  $1(6) = 6$   
 4:  $1(5.5) = 5.5$   
 5:  $1(4) = 4$   
25

25

4)  $y = -\frac{x^2}{2} + x + 5; [-1, 4]$

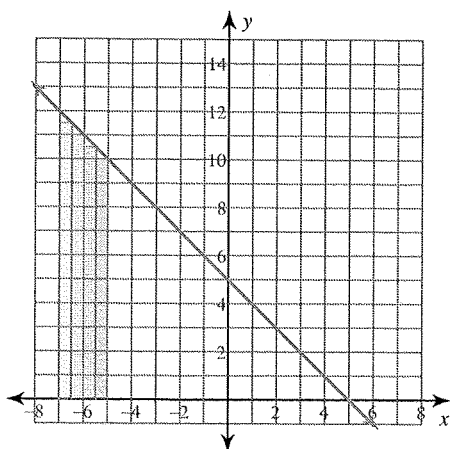


Rect  
 1:  $1(5) = 5$   
 2:  $1(5.5) = 5.5$   
 3:  $1(5) = 5$   
 4:  $1(3.5) = 3.5$   
 5:  $1(1) = 1$   
20

20

For each problem, approximate the area under the curve over the given interval using 4 inscribed rectangles. You may use the provided graph to sketch the curve and rectangles.

5)  $y = -x + 5$ ;  $[-7, -5]$

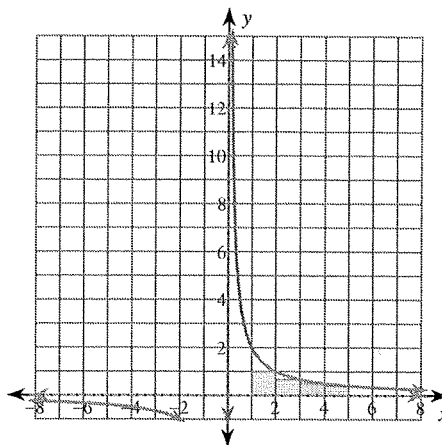


$$\frac{43}{2} = 21.5$$

skip

6)  $y = \frac{2}{x}$ ;  $[1, 5]$

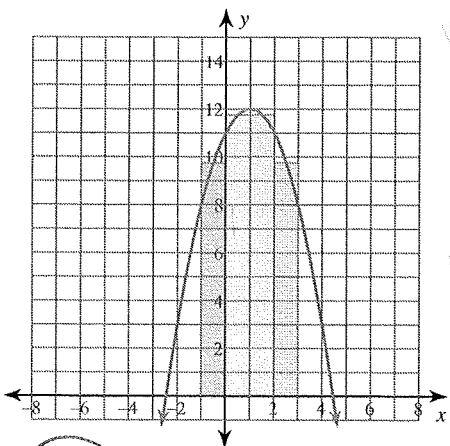
skip



$$\frac{77}{30} \approx 2.567$$

For each problem, approximate the area under the curve over the given interval using 4 midpoint rectangles. You may use the provided graph to sketch the curve and rectangles.

7)  $y = -x^2 + 2x + 11$ ;  $[-1, 3]$

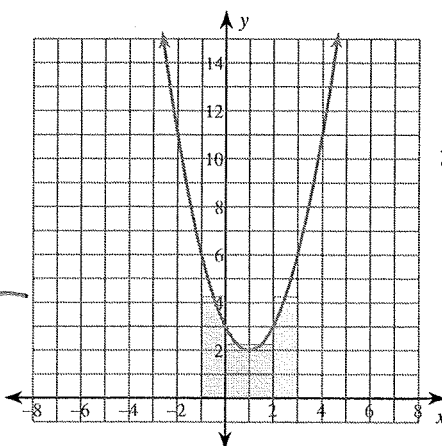


Rect  $b \times h$   
 1:  $(1)(9.75) =$   
 2:  $(1)(11.75) =$   
 3:  $(1)(11.75) =$   
 4:  $(1)(9.75) =$

43

43

8)  $y = x^2 - 2x + 3$ ;  $[-1, 3]$



Rect  $b \times h$   
 1:  $(1)(4.25) =$   
 2:  $(1)(2.25) =$   
 3:  $(1)(2.25) =$   
 4:  $(1)(4.25) =$

13

13

Riemann Sum Tables

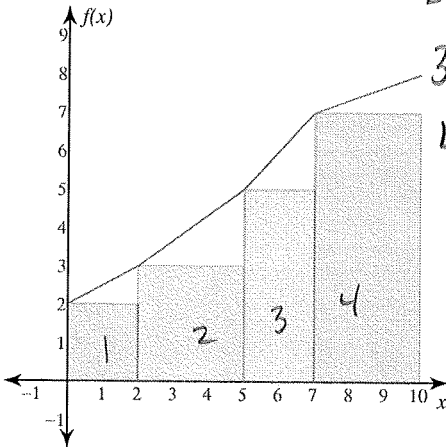
For each problem, use a left-hand Riemann sum to approximate the integral based off of the values in the table. You may use the provided graph to sketch the function data and Riemann sums.

1)  $\int_0^{10} f(x) dx$

LRAM

x	0	2	5	7	10
f(x)	2	3	5	7	8

1:  $2(2) = 4$   
 2:  $3(3) = 9$   
 3:  $5(5) = 10$   
 4:  $7(7) = 21$



44

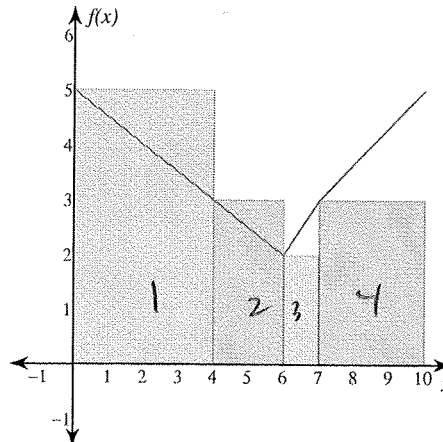
44

2)  $\int_0^{10} f(x) dx$

LRAM

x	0	4	6	7	10
f(x)	5	3	2	3	5

1:  $4(5) = 20$   
 2:  $2(3) = 6$   
 3:  $1(2) = 2$   
 4:  $3(3) = 9$



37

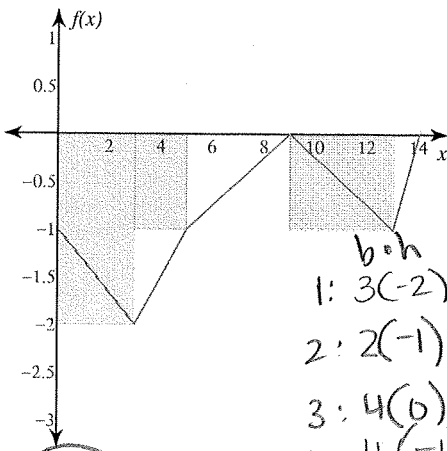
37

For each problem, use a right-hand Riemann sum to approximate the integral based off of the values in the table. You may use the provided graph to sketch the function data and Riemann sums.

3)  $\int_0^{14} f(x) dx$

R R A M

x	0	3	5	9	13	14
f(x)	-1	-2	-1	0	-1	0

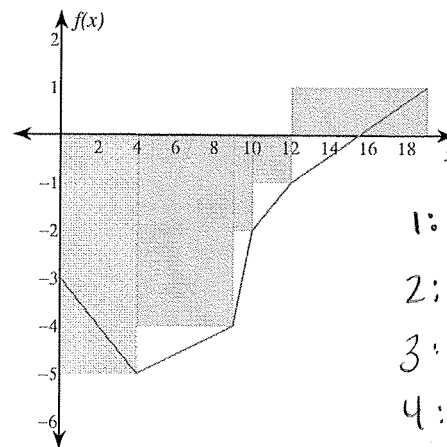


-12

b · h  
 1:  $3(-2) = -6$   
 2:  $2(-1) = -2$   
 3:  $4(0) = 0$   
 4:  $4(-1) = -4$   
 5:  $1(0) = 0$

4)  $\int_0^{19} f(x) dx$

x	0	4	9	10	12	19
f(x)	-3	-5	-4	-2	-1	1



-37

b · h  
 1:  $4(-5) = -20$   
 2:  $5(-4) = -20$   
 3:  $1(-2) = -2$   
 4:  $2(-1) = -2$   
 5:  $7(1) = 7$

-37