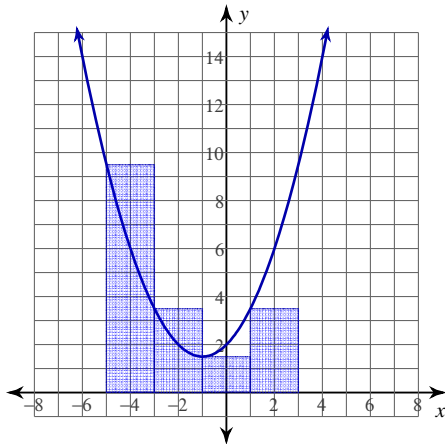


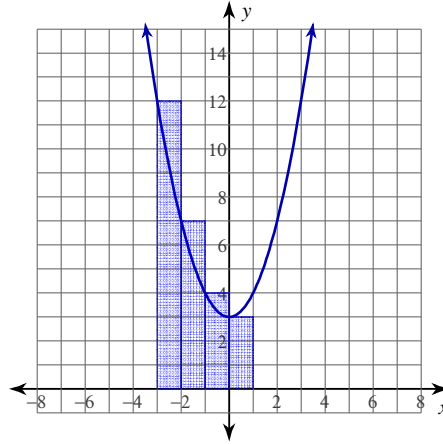
Approximating Area Under a Curve

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

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

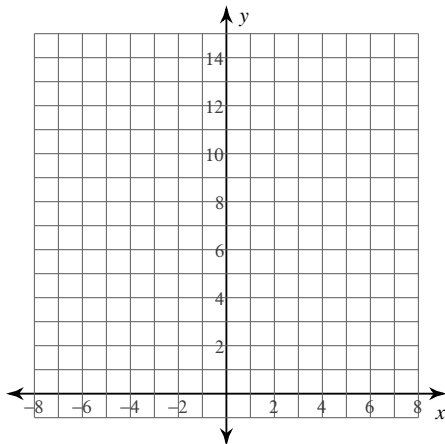


2) $y = x^2 + 3$; $[-3, 1]$

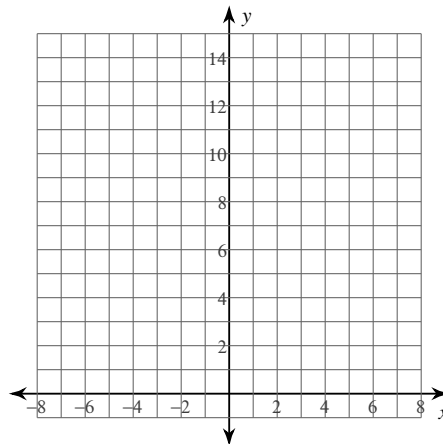


For each problem, approximate the area under the curve over the given interval using 5 right endpoint rectangles. You may use the provided graph to sketch the curve and rectangles.

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

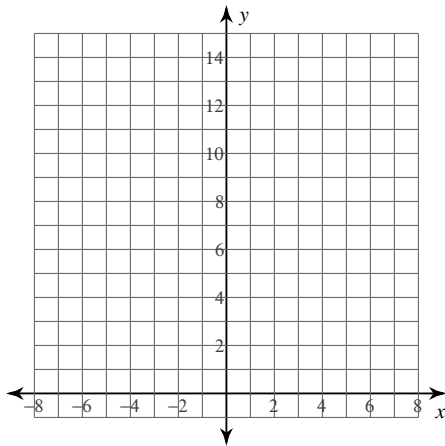


4) $y = -\frac{x^2}{2} + x + 5$; $[-1, 4]$

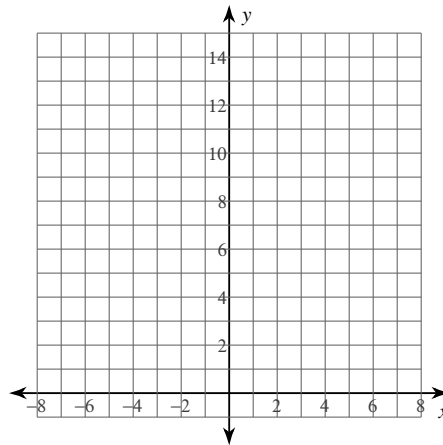


For each problem, approximate the area under the curve over the given interval using 4 inscribed rectangles. You may use the provided graph to sketch the curve and rectangles.

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

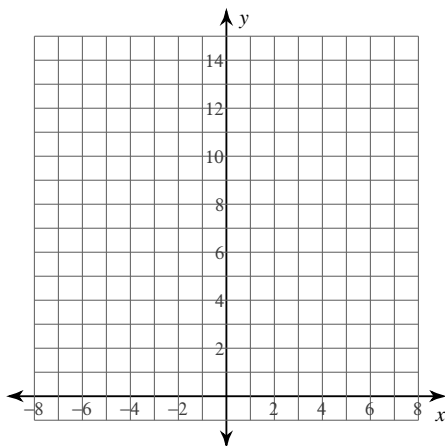


6) $y = \frac{2}{x}$; $[1, 5]$

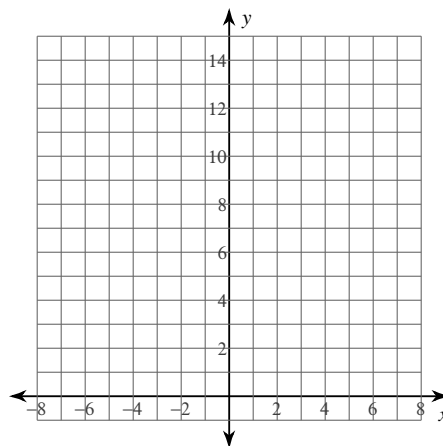


For each problem, approximate the area under the curve over the given interval using 4 midpoint rectangles. You may use the provided graph to sketch the curve and rectangles.

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



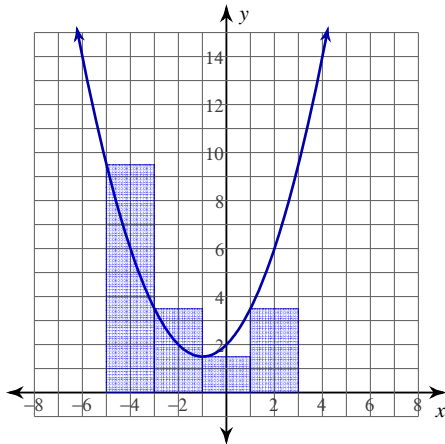
8) $y = x^2 - 2x + 3$; $[-1, 3]$



Approximating Area Under a Curve

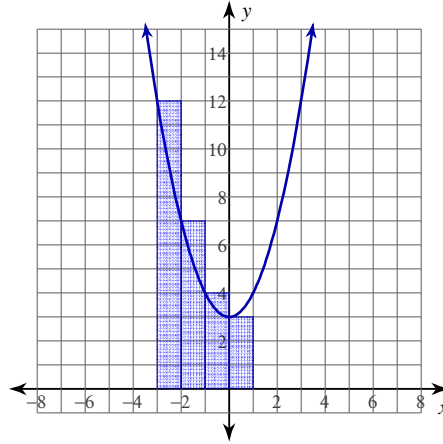
For each problem, approximate the area under the curve over the given interval using 4 left endpoint rectangles.

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



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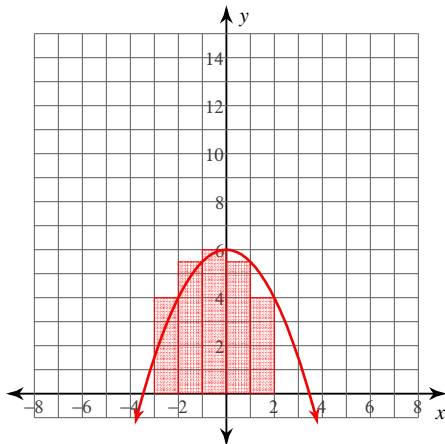
2) $y = x^2 + 3$; $[-3, 1]$



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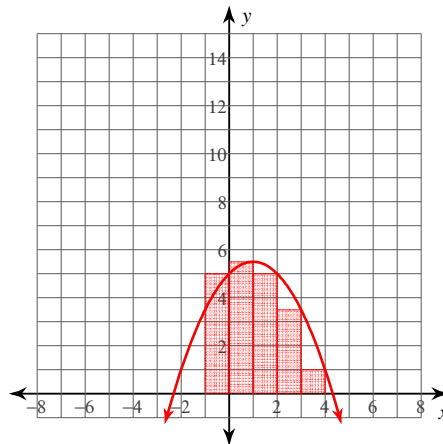
For each problem, approximate the area under the curve over the given interval using 5 right endpoint rectangles. You may use the provided graph to sketch the curve and rectangles.

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



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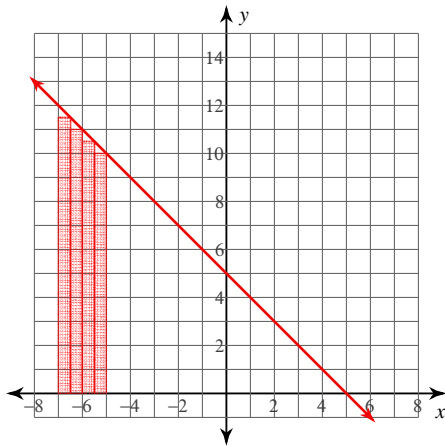
4) $y = -\frac{x^2}{2} + x + 5$; $[-1, 4]$



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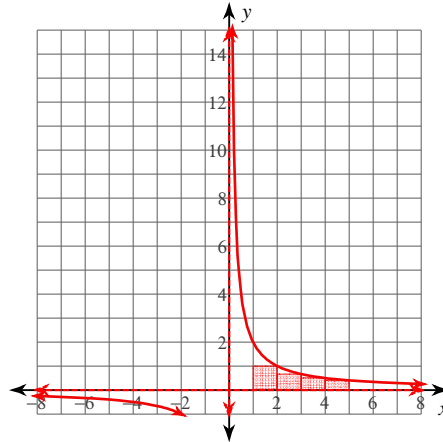
For each problem, approximate the area under the curve over the given interval using 4 inscribed rectangles. You may use the provided graph to sketch the curve and rectangles.

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



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

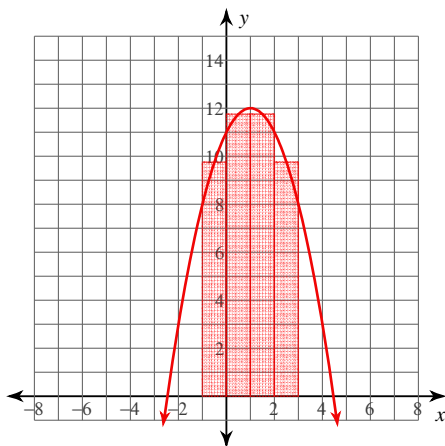
6) $y = \frac{2}{x}$; $[1, 5]$



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

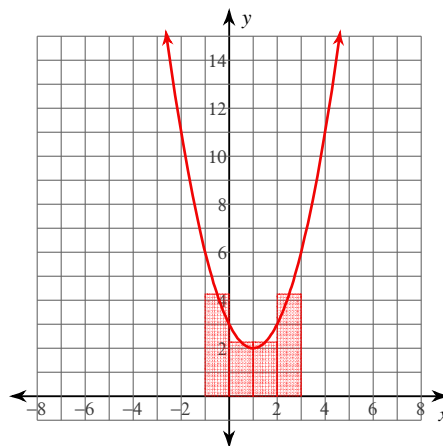
For each problem, approximate the area under the curve over the given interval using 4 midpoint rectangles. You may use the provided graph to sketch the curve and rectangles.

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



$$43$$

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



$$13$$