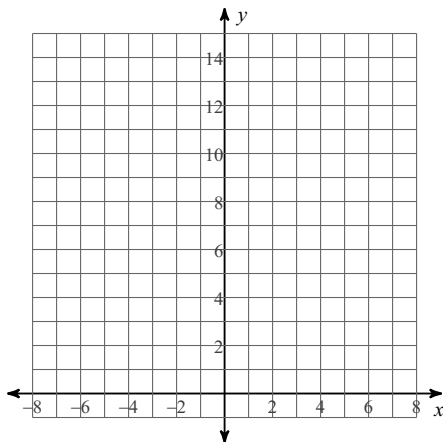


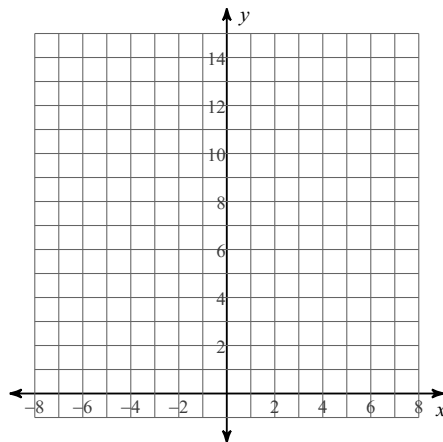
## MRAM, TRAP, Riemann Tables

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.

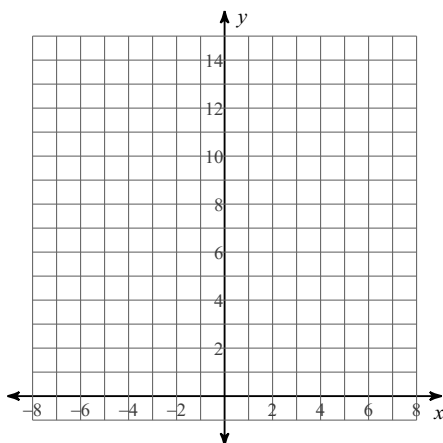
1)  $y = -x^2 + 2x + 11$ ;  $[0, 4]$



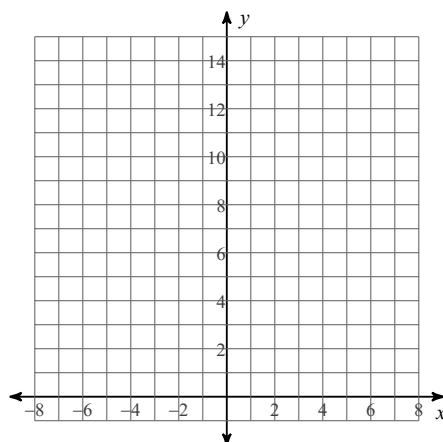
2)  $y = -x^2 - 2x + 10$ ;  $[-3, 1]$



3)  $y = -x^2 - 2x + 10$ ;  $[-2, 2]$

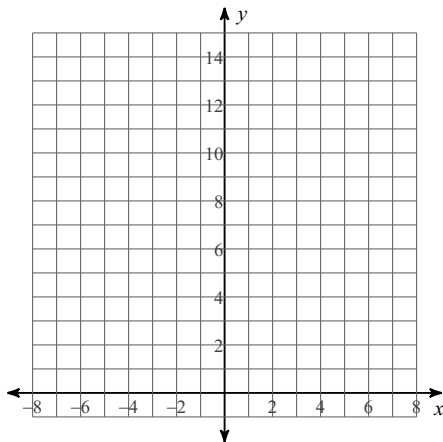


4)  $y = -\frac{x^2}{2} + 6$ ;  $[-3, 1]$

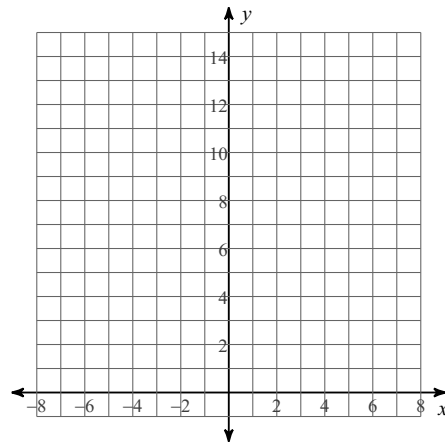


For each problem, approximate the area under the curve over the given interval using 4 trapezoids. You may use the provided graph to sketch the curve and trapezoids.

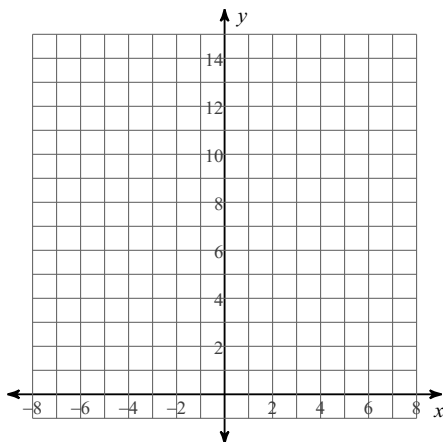
5)  $y = x^2 - 2x + 2$ ;  $[-1, 3]$



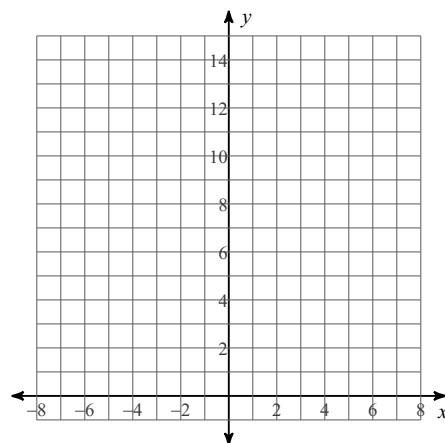
6)  $y = \frac{4}{x}$ ;  $[1, 5]$



7)  $y = -x^2 + 2x + 9$ ;  $[-2, 2]$



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



Approximate (LRAM, RRAM, TRAP) each integral using the table and the subintervals indicated.

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

$x$	0	1	4	6	9	10
$f(x)$	9	8	9	7	9	7

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

$x$	0	3	5	7	9	10
$f(x)$	3	2	3	5	7	5