Calculus Name_____



# Riemann Sums

Date_____ Period____

**For each problem, use a left-hand Riemann sum to approximate the integral based off of the values in the table.**

1) $\int_0^9 f(x)\,dx$

| $x$ | 0 | 4 | 5 | 6 | 9 |
|---|---|---|---|---|---|
| $f(x)$ | 7 | 5 | 3 | 5 | 7 |

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

| $x$ | 0 | 1 | 4 | 6 | 9 | 10 |
|---|---|---|---|---|---|---|
| $f(x)$ | 6 | 4 | 5 | 3 | 2 | 4 |

3) $\int_0^8 f(x)\,dx$

| $x$ | 0 | 1 | 2 | 3 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|---|
| $f(x)$ | 2 | 3 | 5 | 3 | 5 | 6 | 8 |

4) $\int_0^9 f(x)\,dx$

| $x$ | 0 | 1 | 2 | 3 | 4 | 6 | 9 |
|---|---|---|---|---|---|---|---|
| $f(x)$ | 0 | −1 | 0 | 1 | 0 | −1 | −2 |

**For each problem, use a right-hand Riemann sum to approximate the integral based off of the values in the table.**

5) $\int_0^9 f(x)\,dx$

| $x$ | 0 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| $f(x)$ | 6 | 4 | 5 | 7 | 6 |

6) $\int_0^9 f(x)\,dx$

| $x$ | 0 | 4 | 5 | 6 | 8 | 9 |
|---|---|---|---|---|---|---|
| $f(x)$ | 0 | 1 | 0 | −1 | 0 | −1 |

7) $\int_0^8 f(x)\,dx$

| $x$ | 0 | 2 | 3 | 4 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| $f(x)$ | 6 | 7 | 5 | 3 | 2 | 3 | 2 |

8) $\int_0^9 f(x)\,dx$

| $x$ | 0 | 1 | 2 | 5 | 6 | 7 | 9 |
|---|---|---|---|---|---|---|---|
| $f(x)$ | −3 | −2 | −1 | −2 | −3 | −2 | −1 |

**For each problem, approximate the area under the curve over the given interval using L-$RAM_4$, M-$RAM_4$, R-$RAM_4$, $TRAP_4$, and Simpson's-4.**

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

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

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

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