LO 3.2A Interpret the definite integral as the limit of a Riemann sum. Express the limit of a Riemann sum in integral notation.

Instructions: Match the integral expression in the left column with the appropriate limit of a Riemann sum in the right column.

1. $\int_1^3 (4x^2+2)\,dx$	d	a. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[4\left(5-\frac{3j}{n}\right)-2\right]\left(\frac{-3}{n}\right)$
2. $\int_2^5 (x^3+1)\,dx$	c	b. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[4\left(2+\frac{3j}{n}\right)^2+2\right]\left(\frac{3}{n}\right)$
3. $\int_7^5 (3x+1)\,dx$	e	c. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[\left(2+\frac{3j}{n}\right)^3+1\right]\left(\frac{3}{n}\right)$
4. $\int_2^4 (4x^2+2)\,dx$	j	d. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[4\left(1+\frac{2j}{n}\right)^2+2\right]\left(\frac{2}{n}\right)$
5. $\int_5^2 (4x-2)\,dx$	a	e. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[3\left(7-\frac{2j}{n}\right)+1\right]\left(\frac{-2}{n}\right)$
6. $\int_2^5 (4x^2+2)\,dx$	b	f. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[4\left(3-\frac{2j}{n}\right)^2+2\right]\left(\frac{-2}{n}\right)$
7. $\int_5^7 (4x-2)\,dx$	h	g. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[3\left(2+\frac{3j}{n}\right)+1\right]\left(\frac{3}{n}\right)$
8. $\int_3^1 (4x^2+2)\,dx$	f	h. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[4\left(5+\frac{2j}{n}\right)-2\right]\left(\frac{2}{n}\right)$
9. $\int_5^7 (x^3+1)\,dx$	i	i. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[\left(5+\frac{2j}{n}\right)^3+1\right]\left(\frac{2}{n}\right)$
10. $\int_2^5 (3x+1)\,dx$	g	j. $\lim_{n\to\infty}\sum_{j=1}^{n}\left[4\left(2+\frac{2j}{n}\right)^2+2\right]\left(\frac{2}{n}\right)$

length of interval (negative right to left)

lower limit of integration

LO 3.2A Interpret the definite integral as the limit of a Riemann sum. Express the limit of a Riemann sum in integral notation.

Instructions: Fill in the missing integral expression in the left column or the appropriate limit of a Riemann sum in the right column.

1. $\int_1^3 (4x^2 + 2)\, dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[4\left(1+\frac{2j}{n}\right)^2+2\right]\left(\frac{2}{n}\right)$

2. $\int_2^5 (4x^2+2)\,dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[4\left(2+\frac{3j}{n}\right)^2+2\right]\left(\frac{3}{n}\right)$

3. $\int_7^5 (3x + 1)\, dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[3\left(7-\frac{2j}{n}\right)+1\right]\left(\frac{-2}{n}\right)$

4. $\int_2^4 (4x^2+2)\,dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[4\left(2+\frac{2j}{n}\right)^2+2\right]\left(\frac{2}{n}\right)$

5. $\int_5^2 (4x - 2)\, dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[4\left(5-\frac{3j}{n}\right)-2\right]\left(\frac{-3}{n}\right)$

6. $\int_3^1 (4x^2+2)\,dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[4\left(3-\frac{2j}{n}\right)^2+2\right]\left(\frac{-2}{n}\right)$

7. $\int_5^7 (4x - 2)\, dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[4\left(5+\frac{2j}{n}\right)-2\right]\left(\frac{2}{n}\right)$

8. $\int_2^5 (3x+1)\,dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[3\left(2+\frac{3j}{n}\right)+1\right]\left(\frac{3}{n}\right)$

9. $\int_5^7 (x^3 + 1)\, dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[\left(5+\frac{2j}{n}\right)^3+1\right]\left(\frac{2}{n}\right)$

10. $\int_2^5 (x^3+1)\,dx$ — $\lim_{n\to\infty} \sum_{j=1}^{n} \left[\left(2+\frac{3j}{n}\right)^3+1\right]\left(\frac{3}{n}\right)$