Task card 1 Approximating Integrals: Riemann S...

The table gives values of a function f. Use the trapezoidal rule with the 5 subintervals shown to approximate ∫ from 1 to 11 of f(x) dx.

x	1	3	5	7	9	11
f(x)	1	0	2	4	7	5

Task card 2 Approximating Integrals: Riemann S...

The table gives values of a function f at unequally spaced points. Use a trapezoidal sum with the 3 subintervals shown to approximate ∫ from 1 to 10 of f(x) dx.

x	1	4	8	10
f(x)	4	5	12	10

Task card 3 Approximating Integrals: Riemann S...

The table gives values of a function f. Use a midpoint Riemann sum with 3 subintervals of equal width to approximate ∫ from 0 to 6 of f(x) dx.

x	0	1	2	3	4	5	6
f(x)	6	2	6	10	14	13	10

Task card 4 Approximating Integrals: Riemann S...

Let f(x) = √x on [1, 9]. Will the trapezoidal rule with n = 4 overestimate or underestimate ∫ from 1 to 9 of f(x) dx? (A) overestimate (B) underestimate

Task card 5 Approximating Integrals: Riemann S...

Approximate ∫ from 2 to 6 of (2x + 1) dx using the trapezoidal rule with n = 2 equal subintervals.

Task card 6 Approximating Integrals: Riemann S...

Let f(x) = sin x on [0, π/2]. Will a left Riemann sum with n = 5 overestimate or underestimate ∫ from 0 to π/2 of f(x) dx? (A) overestimate (B) underestimate

Task card 7 Approximating Integrals: Riemann S...

Let $f(x) = (x - 5)^2$ on [0, 4]. Will a midpoint Riemann sum with n = 7 overestimate or underestimate $\int$ from 0 to 4 of f(x) dx? (A) overestimate (B) underestimate

Task card 8 Approximating Integrals: Riemann S...

Approximate the area under $f(x) = x^2 + 4$ from x = 1 to x = 7 using a midpoint Riemann sum with n = 3 equal subintervals.

Task card 9 Approximating Integrals: Riemann S...

The table gives values of a function f. Use the trapezoidal rule with the 3 subintervals shown to approximate $\int$ from 1 to 16 of f(x) dx.

x	1	6	11	16
f(x)	10	12	15	19

Task card 10 Approximating Integrals: Riemann S...

The table gives values of a function f at unequally spaced points. Use a trapezoidal sum with the 4 subintervals shown to approximate $\int$ from 1 to 8 of f(x) dx.

x	1	3	4	5	8
f(x)	7	6	3	10	8

Task card 11 Approximating Integrals: Riemann S...

The table gives values of a function f. Use a midpoint Riemann sum with 2 subintervals of equal width to approximate $\int$ from 1 to 9 of f(x) dx.

x	1	3	5	7	9
f(x)	5	8	8	11	14

Task card 12 Approximating Integrals: Riemann S...

Let $f(x) = x^3$ on [1, 3]. Will the trapezoidal rule with n = 6 overestimate or underestimate $\int$ from 1 to 3 of f(x) dx? (A) overestimate (B) underestimate

Task card 13 Approximating Integrals: Riemann S...

Approximate $\int$ from 1 to 5 of (x^2 + 3) dx using the trapezoidal rule with n = 2 equal subintervals.

Task card 14 Approximating Integrals: Riemann S...

Let f(x) = x^2 on [0, 4]. Will a left Riemann sum with n = 3 overestimate or underestimate $\int$ from 0 to 4 of f(x) dx? (A) overestimate (B) underestimate

Task card 15 Approximating Integrals: Riemann S...

Let f(x) = 16 - x^2 on [0, 4]. Will the trapezoidal rule with n = 8 overestimate or underestimate $\int$ from 0 to 4 of f(x) dx? (A) overestimate (B) underestimate

Task card 16 Approximating Integrals: Riemann S...

Approximate the area under f(x) = x^2 - 2x + 2 from x = 0 to x = 4 using a midpoint Riemann sum with n = 2 equal subintervals.

Task card 17 Approximating Integrals: Riemann S...

The table gives values of a function f. Use the trapezoidal rule with the 5 subintervals shown to approximate $\int$ from 0 to 25 of f(x) dx.

x	0	5	10	15	20	25
f(x)	9	10	8	10	10	16

Task card 18 Approximating Integrals: Riemann S...

The table gives values of a function f at unequally spaced points. Use a trapezoidal sum with the 4 subintervals shown to approximate $\int$ from 1 to 8 of f(x) dx.

x	1	3	4	6	8
f(x)	6	9	8	11	17

Task card 19 Approximating Integrals: Riemann S...

The table gives values of a function f. Use a midpoint Riemann sum with 2 subintervals of equal width to approximate ∫ from 2 to 6 of f(x) dx.

x	2	3	4	5	6
f(x)	12	17	18	21	23

Task card 20 Approximating Integrals: Riemann S...

Let f(x) = sin x on [0, π/2]. Will the trapezoidal rule with n = 5 overestimate or underestimate ∫ from 0 to π/2 of f(x) dx? (A) overestimate (B) underestimate

Task card 21 Approximating Integrals: Riemann S...

Approximate ∫ from 2 to 5 of (3x + 4) dx using the trapezoidal rule with n = 3 equal subintervals.

Task card 22 Approximating Integrals: Riemann S...

The function f is decreasing on [0, 3]. Will a right Riemann sum with n = 5 overestimate or underestimate ∫ from 0 to 3 of f(x) dx? (A) overestimate (B) underestimate

Task card 23 Approximating Integrals: Riemann S...

Let $f(x) = x^3$ on [1, 3]. Will a midpoint Riemann sum with n = 5 overestimate or underestimate ∫ from 1 to 3 of f(x) dx? (A) overestimate (B) underestimate

Task card 24 Approximating Integrals: Riemann S...

Approximate the area under f(x) = x + 5 from x = 0 to x = 6 using a midpoint Riemann sum with n = 3 equal subintervals.

Approximating Integrals: Riemann Sums & the Trapezoidal Rule Task Cards

Recording sheet · Grade 12 · Give each approximation as an exact number (a decimal such as 24.5 is fine). For overestimate or underestimate questions, answer with the letter A or B.

Scan to check your answers

Name: _____ Date: _____

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24

Approximating Integrals: Riemann Sums & the Trapezoidal Rule Task Cards: Answer Key

Grade 12 · Hard

The answers online

1. 32	**2.** 69.5	**3.** 50
4. B	**5.** 36	**6.** B
7. B	**8.** 136	**9.** 207.5
10. 51	**11.** 76	**12.** A
13. 56	**14.** B	**15.** B
16. 12	**17.** 252.5	**18.** 70.5
19. 76	**20.** B	**21.** 43.5
22. B	**23.** B	**24.** 48