✔ 5.2.4

Write the sum without sigma notation. Then evaluate.

$$\sum_{k=2}^{6} \cos k\pi$$

Write out the sum.

$$\sum_{k=2}^{6} \cos k\pi = \cos(2\pi) + \cos(3\pi) + \cos(4\pi) + \cos(5\pi) + \cos(6\pi)$$

Evaluate the sum.

$$\sum_{k=2}^{6} \cos k\pi = 1 \text{ (Simplify your answer.)}$$

✔ 5.2.14

Express the following sum in sigma notation. Use 1 as the lower limit of summation and k for the index of summation.

$$9 + 18 + 27 + 36 + 45$$

Choose the correct answer below.

○ A. $\displaystyle\sum_{k=1}^{5} 3k$

○ B. $\displaystyle\sum_{k=1}^{5} 11k$

○ C. $\displaystyle\sum_{k=1}^{5} k$

✔ D. $\displaystyle\sum_{k=1}^{5} 9k$

✔ 5.2.21

Evaluate the sum $\displaystyle\sum_{k=1}^{7}(-14k)$.

$\displaystyle\sum_{k=1}^{7}(-14k) = \boxed{-392}$

(Simplify your answer.)

✔ 5.3.3

Express the limit $\displaystyle\lim_{\|P\|\to 0}\sum_{k=1}^{n}\left(c_k^7 - 3c_k\right)\Delta x_k$, P a partition of $[-2,6]$, as a definite integral.

The limit expressed as a definite integral is $\displaystyle\int_{-2}^{6}\left(x^7 - 3x\right)dx$.

✔ 5.3.7

Express the limit $\displaystyle\lim_{\|P\|\to 0}\sum_{k=1}^{n}\left(\cot c_k\right)\Delta x_k$ as a definite integral where P is a partition of $\left[\dfrac{\pi}{3}, \dfrac{2\pi}{3}\right]$.

The limit expressed as a definite integral, is $\displaystyle\int_{\frac{\pi}{3}}^{\frac{2\pi}{3}}\left(\cot x\right)dx$.

(Type an exact answer, using π as needed.)

✔ 5.3.13

Suppose that f is integrable, and that $\int_1^4 f(z)dz = 4$ and $\int_1^5 f(z)dz = 9$. Find the value of the following definite integrals.

(a) $\int_4^5 f(z)dz =$ 5 (Type an integer or a decimal.)

(b) $\int_5^4 f(z)dz =$ −5 (Type an integer or a decimal.)

✔ 5.3.37

Evaluate the integral $\int_a^{4a} x\, dx$.

The value of the integral $\int_a^{4a} x\, dx = \dfrac{15a^2}{2}$.

✔ 5.3.41

Evaluate the integral $\int_{12}^{11} 2\, dx$.

The value of the integral $\int_{12}^{11} 2\, dx =$ −2 .

(Simplify your answer.)

✔ 5.4.1

Evaluate the following integral.

$$\int_{0}^{3} 2x(x-3)dx$$

$\int_{0}^{3} 2x(x-3)dx =$ -9 (Simplify your answer.)

✔ 5.4.5

Evaluate the given definite integral.

$$\int_{1}^{2} \left(4x^3 - \frac{x^4}{5}\right) dx$$

$\int_{1}^{2} \left(4x^3 - \frac{x^4}{5}\right) dx = \dfrac{344}{25}$ (Simplify your answer.)

✔ 5.4.7

Evaluate the integral.

$$\int_{0}^{1} \left(2x^2 + \sqrt{x}\right) dx$$

$\int_{0}^{1} \left(2x^2 + \sqrt{x}\right) dx = \dfrac{4}{3}$ (Simplify your answer.)

✅ 5.4.9

Evaluate the integral.

$$\int_0^{\pi/4} 8\sec^2 x \, dx$$

$\int_0^{\pi/4} 8\sec^2 x \, dx = 8$ (Type an exact answer, using radicals as needed.)

✅ 5.4.17

Evaluate the following integral.

$$\int_0^{\frac{\pi}{8}} \sin 2x \, dx$$

$\int_0^{\frac{\pi}{8}} \sin 2x \, dx = \dfrac{-1 + \sqrt{2}}{2\sqrt{2}}$
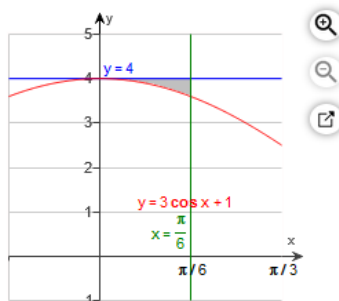
(Type an exact answer, using radicals as needed.)

✅ 5.4.51   ☰ Question Help ⚙

Find the shaded region in the graph.

What is the area of the shaded region?

$$\frac{\pi}{2} - \frac{3}{2}$$

(Simplify your answer, including any radicals. Use integers or fractions for any numbers in the expression. Type an exact answer in terms of π.)

✔ 5.5.4

Find the indefinite integral.

$$\int \frac{x^2}{\left(2-x^3\right)^2}\,dx$$

$$\int \frac{x^2}{\left(2-x^3\right)^2}\,dx = \boxed{\frac{1}{3\left(2-x^3\right)}} + c$$

(Use C as the arbitrary constant.)

✔ 5.5.5

Evaluate the indefinite integral by using the substitution $u = x^2 + x$ to reduce the integral to standard form.

$$\int \left(x^2 + x\right)^9 (2x + 1)\,dx$$

$$\int \left(x^2 + x\right)^9 (2x + 1)\,dx = \boxed{\frac{\left(x^2 + x\right)^{10}}{10}} + c$$

(Use C as the arbitrary constant.)

✔ 5.5.7

Evaluate the indefinite integral by using the given substitution to reduce the integral to standard form.

$$\int \sin(5x)\,dx, \quad u = 5x$$

$$\int \sin(5x)\,dx = \boxed{\frac{-\cos(5x)}{5}} + c$$

(Use C as the arbitrary constant.)

✔ 5.6.15

Use the Substitution Formula to evaluate the integral $\displaystyle\int_0^1 \sqrt{t^9 + 4t}\,(9t^8 + 4)\,dt$.

$$\int_0^1 \sqrt{t^9 + 4t}\,(9t^8 + 4)\,dt = \frac{10\sqrt{5}}{3}$$

(Type an exact answer, using radicals as needed.)

✔ 5.6.17

Use the Substitution Formula to evaluate the integral $\displaystyle\int_0^{\pi/6} \cos^{-7} 2x \, \sin 2x \, dx$.

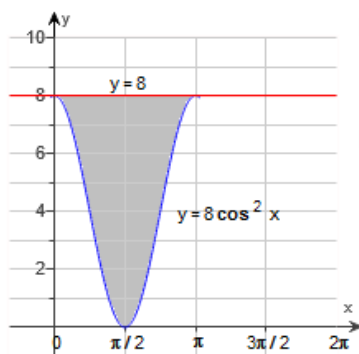$$\int_0^{\pi/6} \cos^{-7} 2x \, \sin 2x \, dx = \frac{21}{4}$$

✔ 5.6.29

Find the total area of the shaded region.

$y = 8$

$y = 8\cos^2 x$

The total area of the shaded region is 4π.

(Type an exact answer, using π as needed.)