Evaluate $\displaystyle\int \frac{\sin x}{3\sqrt{\cos x}}\,dx$.

$$\int \frac{\sin x}{3\sqrt{\cos x}}\,dx = \square + c$$

u=cosx

du==-sinxdx

$$\int \frac{-du}{3\sqrt{u}} = \frac{-1}{3}\int u^{-1/2}\,du$$

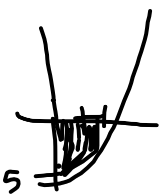
$$-\frac{1}{3}\,\frac{u^{1/2}}{1/2} + C$$

$$\boxed{-\frac{2}{3}(\cos x)^{1/2} + c}$$

Round your answer to the nearest whole number.

Compute the average value of the function $f(x) = x^2 - 5$ on the interval [0,3].

$$A: \frac{\int_0^3 x^2 - 5\,dx}{L: (3-0)}$$



5

$$\frac{\frac{x^3}{3} - 5x\Big|_0^3}{3} = \frac{\left(\frac{27}{3} - 15\right) - 0}{3-0}$$

$$= \frac{-6}{3} = -2$$

fnint$(x^2-5, x, 0, 3)/(3-0)$

For $f(x) = \int_2^x (t^2 - 4t + 5)\, dt$, compute $f'(x)$.

$\downarrow$ FTC

$f(x) = F(x) - F(2)$

$f'(x) = F'(x) \quad (F(2) \to 0)$

$= x^2 - 4x + 5$

List the evaluation points corresponding to the midpoint of each subinterval to three decimal places, sketch the function and approximating rectangles and evaluate the Riemann sum to six decimal places if needed.

$f(x) = x^2 + 6, \quad [-1, 2], \; n = 4.$

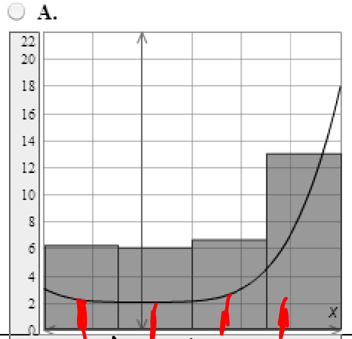
Give your answer in an ascending order.

Evaluation points: $\boxed{-5/8}$, $\boxed{1/8}$, $\boxed{7/8}$ and $\boxed{13/8}$.

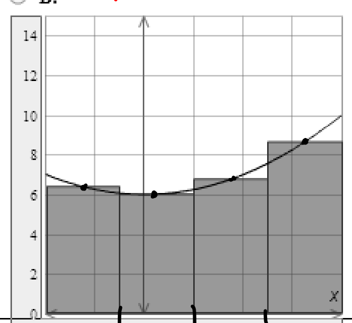
$\text{sum(seq}(x^2+6, x, -5/8, 13/8, 3/4)) * 3/4 = 20.859375$

$-1 \quad -1/4$

A.



B.



$-1 \quad 2 \qquad -1 \quad 2$

$\underbrace{\quad}_{3/4} \quad \underbrace{\quad}_{3/4} \quad \underbrace{\quad}_{3/4} \quad \underbrace{\quad}_{3/4}$

$-\frac{5}{8} + \frac{3}{4} \qquad \frac{1}{8} + \frac{3}{4} \qquad \frac{7}{8} + \frac{3}{4}$

$-1 + 3/8$

$-5/8 \qquad 1/8 \qquad 7/8 \qquad 13/8$

Compute $\int_1^9 \left(\sqrt{x} - \frac{1}{x^2}\right) dx$.

$x^{1/2} - x^{-2}$

$\frac{x^{3/2}}{3/2} - \frac{x^{-1}}{-1}\Big|_1^9$

$\left(\frac{9^{3/2}}{3/2} - \frac{9^{-1}}{-1}\right) - \left(\frac{1}{3/2} - \frac{1}{-1}\right)$

$\frac{2}{3} \cdot \overset{9}{\cancel{27}} + \frac{1}{9} - \frac{2}{3} - 1$

$18 + \frac{1}{9} - \frac{2}{3} - 1$

$16\ 4/9$

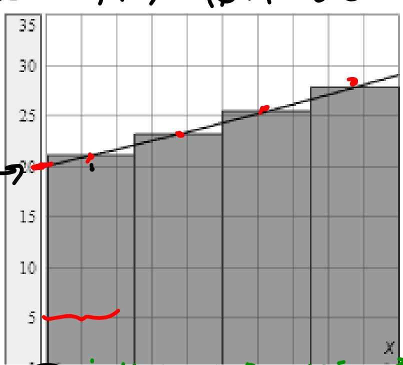
List the evaluation points corresponding to the midpoint of each subinterval to three decimal places, sketch the function and approximating rectangles and evaluate the Riemann sum to six decimal places if needed.

$f(x) = x^2 + 4$, $[4, 5]$, $n = 4$.

Give your answer in an ascending order.

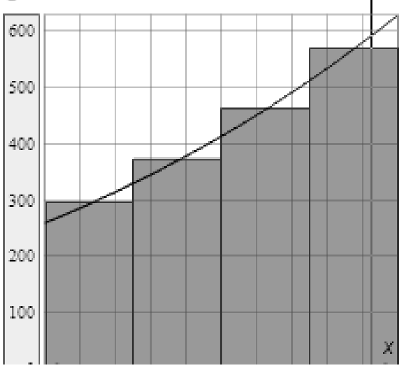
Evaluation points: ____, ____, ____ and ____.

A. $f(4) = 16 + 4 = 20$



4, $4\frac{1}{8}$, 4.25, $4\frac{3}{8}$, 4.50, $4\frac{5}{8}$, 4.75, $4\frac{7}{8}$, 5

B.



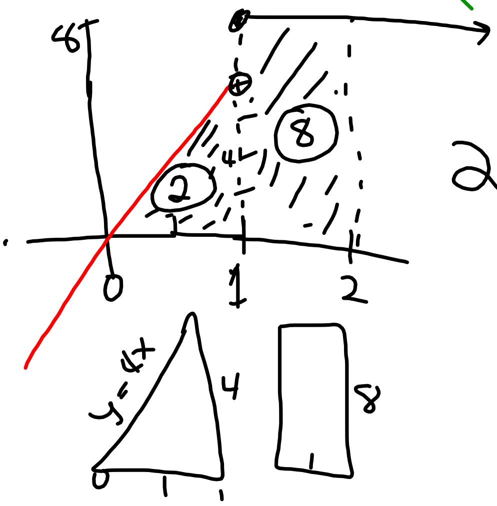
sum(seq($(x^2+4, x, 4.125, 5, .25)$) $*$ .25

$= 16.328125$

Question

Write your answer in decimal form.

Compute the area of $\int_0^2 f(x)\ dx$ for $f(x) = 4x$ if $x < 1$, and $f(x) = 8$ if $x \geq 1$.



$2 + 8 = 10$

$$\int_2^2 x\,dx = F(2) - F(2) = 0$$

Make the indicated substitution for an unspecified function $f(x)$.

$u = \sin x$ for $\int_0^{\pi/2} 2(\cos x) f(\sin x)\ dx$

$x =$

A. $\int_0^1 2f(u)\ du$

B. $\int_0^{1/2} f(u)\ du$

C. $\int_0^{1/2} 2f(u)\ du$

D. $\int_0^1 f(u)\ du$

$u(\pi/2) =$

$u(0) =$

$u = \sin x$

$du = \cos x\, dx$

$1 = \sin(\pi/2)$

$$\int_{u=0}^{1} 2 f(u)\, du$$

$0 = \sin(0)$

Use summation rules to compute the sum.

$$\sum_{i=1}^{68} (2i - 9) = \boxed{}$$

$$2\sum_{i=1}^{68} i - 9\sum_{i=1}^{68} 1$$

$$2\cdot\frac{68}{2}\cdot(69) - 9\cdot(68)$$

$$60\cdot 68 = 4080$$

sum(seq(2X-9,X,1,68,1))

Find the area of the region bounded by $y = 4x^2$, $x = 4$, and the x-axis. Express your answer as a decimal rounded to three places, if necessary.

Your Answer: $\boxed{}$

$y = 4x^2$
$y = 0$
$(0,0)$

$$\int_0^4 4x^2\,dx$$

Use Part I of the Fundamental Theorem to compute the integral exactly.

$$\int_0^4 x(x-4)\,dx$$

$$\int x^2 - 4x\,dx$$

$$\frac{x^3}{3} - \frac{4x^2}{2}\Big|_0^4$$

$$= \frac{4^3}{3} - \frac{4\cdot 4^2}{2}$$

Evaluate the given integral.

$$\int_{-80}^{80} xe^{-7x^2}\,dx = \int_{\cdot}^{-7(80)^2} e^u \frac{du}{-14}$$

$u = -7(80)^2 = -7(80)^2$

x:

Your Answer: $\boxed{0}$

$u = -7x^2$

$du = -14x\,dx$

$$\int_a^a ? = 0$$

Find the position function $s(t)$ given the acceleration function and an initial value.
$a(t) = 4 - t$, $v(0) = 7$, $s(0) = 0$

$a(t) = 4 - t$

$v(t) = \int 4 - t \, dt$

$v(t) = 4t - \frac{t^2}{2} + C$

$v(0) = 7 = 0 - 0 + C \quad C = 7$

$v(t) = 4t - \frac{t^2}{2} + 7$

$\boxed{s(t) = 2t^2 - \frac{t^3}{6} + 7t} + C$

$s(0) = 0 - 0 + 0 + C = 0$

Evaluate $\int_{x=2}^{3} x^2\sqrt{x^3 + 6}\, dx$.

- A. $\left(\frac{1}{3}\right)\left(\frac{2}{3}\right)[14^{3/2} - 33^{3/2}]$
- B. $\left(\frac{1}{3}\right)[33^{3/2} - 14^{3/2}]$
- C. $\left(\frac{2}{3}\right)[33^{3/2} - 14^{3/2}]$
- D. $\left(\frac{1}{3}\right)\left(\frac{2}{3}\right)[33^{3/2} - 14^{3/2}]$

$u = x^3 + 6$

$du = 3x^2\, dx$

$\frac{du}{3} = x^2\, dx$

$\int_{14}^{33} \sqrt{u}\, \frac{du}{3}$

$\left(\frac{1}{3}\right) \frac{u^{3/2}}{3/2} \Big|_{14}^{33}$

$\left(\frac{2}{3}\right)\left(\frac{1}{3}\right)\left((33)^{3/2} - (14)^{3/2}\right)$