Your response:

Determine the intervals where the graph of the given function is concave up and concave down.

$f(x) = 8x^{4/3} + 19x^{1/3}$

Concave up: $x >$ ☐ and $x <$ ☐ , concave down: ☐ $< x <$ ☐

$y' = \frac{32}{3}x^{1/3} + \frac{19}{3}x^{-2/3}$

$y'' = \frac{32}{9}x^{-2/3} - \frac{38}{9}x^{-5/3}$

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$Y_1 = 8x\wedge(4/3)+19x\wedge(1/3)$

$Y_2 = \text{nderiv}(Y_1, X, X)$

$Y_3 = \text{nderiv}(Y_2, X, X)$

calc 2: zero

left: 1/100

right: 2

guess: 2

1stox

x-y3/nederiv(y3,x,x)

Your response:

Determine the intervals where the graph of the given function is concave up and concave down.

$f(x) = 8x^{4/3} + 19x^{1/3}$

Concave up: $x >$ ☐ and $x <$ ☐ , concave down: ☐ $< x <$ ☐

$f(x) = 8x^{4/3} + 19x^{1/3}$

$f'(x) = \frac{32}{3}x^{1/3} + \frac{19}{3}x^{-2/3}$

$f''(x) = \frac{32}{9}x^{-2/3} - \frac{38}{9}x^{-5/3}$

$\frac{38}{9} / \frac{32}{9}$

$x^{-5/3}\left(\frac{32}{9}x^{3/3} - \frac{38}{9}\right)$

$x^{-5/3} = 0$

$\frac{32}{9}x - \frac{38}{9} = 0$

$32x - 38 = 0$

$x = \frac{38}{32} = \frac{19}{16}$

$+ \quad - \quad +$

$0 \qquad \frac{19}{16}$

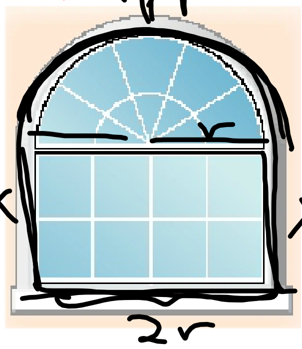
$P = 2x + 2r + \pi r = 6 + \pi$

$x = \dfrac{6+\pi - 2r - \pi r}{2}$

Sec. Ex. 31 - 3.7 Section Exercise 31

Your response:

A Norman window has the outline of a semicircle on top of a rectangle, as shown in the figure. Suppose there is $6 + \pi$ feet of wood trim available. Discuss why a window designer might want to maximize the area of the window. Find the dimensions of the rectangle (and, hence, the semicircle) that will maximize the area of the window. Round all values in your answer to two decimal places if needed.



The dimensions of the rectangle are ☐ feet × ☐ feet.

$A = x(2r) + \frac{1}{2}\pi r^2$

$Y_1 = (6+\pi - 2x - \pi x)/2\,(2x) + \pi x^2/2$

Calc 4: max

$x = 1.28\ldots = r$

11. Award: 0 out of 10.00 points 0 Adjust points Adjust credit for all students. Show correct answer

Sec. Ex. 9 - 4.1 Section Exercise 9

Your response:

Find the general antiderivative. Use c as the constant of integration.

$$\int \frac{30x^{1/3} - 11}{x^{2/3}}\,dx$$

☐

$\dfrac{30x^{1/3}}{x^{2/3}} - \dfrac{11}{x^{2/3}}$

$30x^{1/3}(x^{-2/3}) - 11x^{-2/3}$

$30x^{-1/3} - 11x^{-2/3}$

$45x^{2/3} - 33x^{1/3} + C$

Sec. Ex. 25 - 4.1 Section Exercise 25

Your response:

Find the general antiderivative.

$$\int \frac{2e^x}{2e^x+9}\,dx$$

$u = 2e^x + 9$

$du = 2e^x\,dx$

$\int \frac{1}{u}\,du$

$\int u^{-1}\,du$

$\ln u + C$

$\ln|2e^x + 9| + C$

Sec. Ex. 35 - 4.5 Section Exercise 35

Your response:

Find the position function $s(t)$ given the acceleration function and an initial value.

$a(t) = 12 - t,\ v(0) = 4,\ s(0) = 0$

$s(t) = 6t^2 - \frac{t^3}{6} + 4t$

$f''(t) = 12 - t$

$f'(t) = 12t - \frac{1}{2}t^2 + C$

$f'(0) = 4$

$f(t) = 6t^2 - \frac{1}{6}t^3 + 4t + C$

$S(0) = 0$

$S(t) = 6t^2 - \frac{1}{6}t^3 + 4t$