Online Homework System

Assignment Worksheet
10/7/20 - 12:47:53 AM EDT

Name: _____ **Class:** MAT-140-H1720 20EW1 Precalculus

Class #: _____ **Section #:** _____

Instructor: Marcel Koressa **Assignment:** 5-2 Module Five Problem Set

Assignment Instructions:

Do you need help with this problem or this material? Remember to use the Academic Support resources available on your homepage in Brightspace or or in the learning modules.

Question 1: (3 points)

Find the center and the radius of the circle with the equation

$$x^2 + 12\ x\ + y^2 + 6\ y\ - 124 = 0$$

Enter the center as an ordered pair (x, y).

The center is _____

The radius is _____

Question 2: (5 points)

Consider the value of the trigonometric function

$\sin\left(\frac{\pi}{4}\right)$

It's value is

_____

Now find the exact value of that trigonometric function.

$\sin\left(\frac{\pi}{4}\right) =$ _____

Show your work and explain, in your own words, how you arrived at your answers.

_____

Question 3: (3 points)

Find the reference angle, the quadrant of the terminal side, and the sine and cosine of 315°.

Enter the exact answers.

The terminal side of the angle 315° lies in quadrant _____.

Its reference angle is _____ $^\circ$.

$\sin(315^\circ) =$ _____

$\cos(315^\circ) =$ _____

Question 4: (3 points)

Find the reference angle, the quadrant of the terminal side, and the sine and cosine of $\frac{5\pi}{4}$.

Enter the exact answers.
For the number π, either choose π from the drop-down menu (under α) or type in Pi (with a capital P).

The terminal side of the angle $\frac{5\pi}{4}$ lies in quadrant _____ .

Its reference angle is _____.

$\sin\left(\frac{5\pi}{4}\right) =$ _____

$\cos\left(\frac{5\pi}{4}\right) =$ _____

Question 5: (3 points)

A child enters a carousel that takes one minute to revolve once around. The child enters at the point $(0, 1)$, that is, on the due north position. Assume the carousel revolves counterclockwise.

What are the coordinates of the child after 30 seconds?

Enter the exact answer as a point, (a, b).

_____

Question 6: (3 points)

Evaluate $\csc\left(\frac{\pi}{6}\right)$.

Enter the exact answer.

$\csc\left(\frac{\pi}{6}\right) =$ _____

Question 7: (3 points)

If $\tan t = \frac{4}{3}$ and $\pi < t < \frac{3\pi}{2}$, find $\sin t$, $\cos t$, $\sec t$, $\csc t$, $\cot t$.

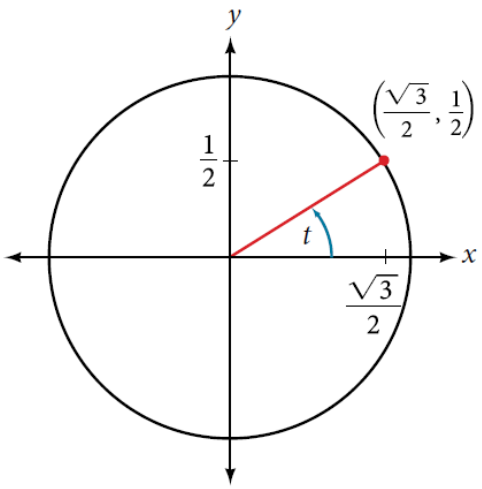
Enter the exact answers.

$\sin t =$ _____
$\cos t =$ _____

$\sec t =$ _____
$\csc t =$ _____
$\cot t =$ _____

Question 8: (6 points)

Use the angle in the unit circle to find the value of the three trigonometric functions below.



Enter the exact answers.

$\sin t =$ _____

$\tan t =$ _____

$\sec t =$ _____

Show your work and explain, in your own words, how you arrived at your answers.

_____

Question 9: (3 points)

Use a graphing calculator to evaluate $\tan\left(\frac{5\pi}{9}\right)$.

Round your answer to three decimal places.

$\tan\left(\frac{5\pi}{9}\right) \approx$ _____

Question 10: (3 points)

The equation $P = 20\sin(2\pi t) + 110$ models the blood pressure, P, where t represents time in seconds.

a. Find the blood pressure after 40 seconds.

Enter the exact answer.

The blood pressure is _____ .

b. What are the maximum and minimum blood pressures?

Enter the exact answers.

The maximum blood pressure is _____ , and the minimum blood pressure is _____ .

Question 11: (6 points)

Graph two full periods of the function $f(x) = \cos(6x)$ and state the amplitude and period.

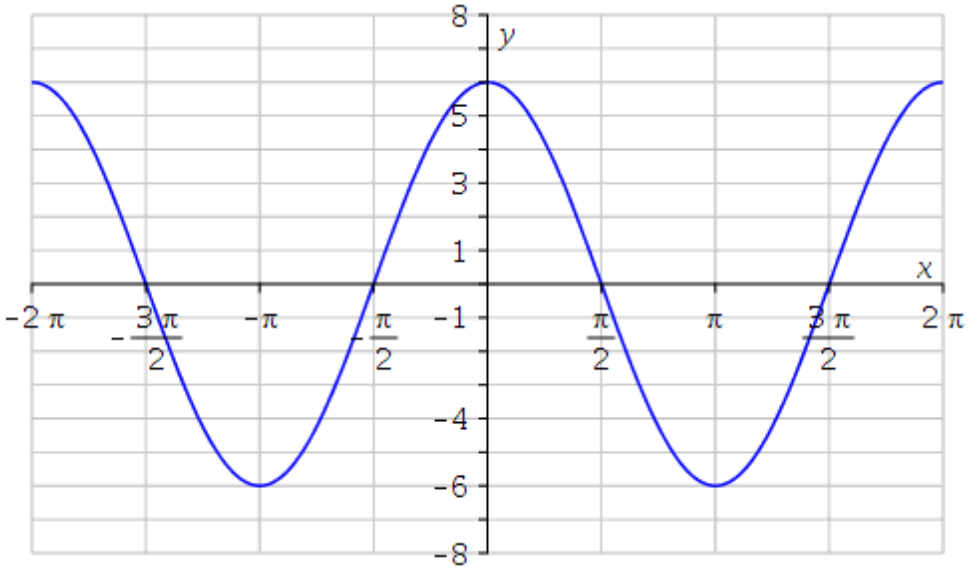
Enter the exact answers.
For the number π, either choose π from the bar at the top or type in Pi (with a capital P).

Amplitude: $A =$ _____

Period: $P =$ _____

Select the correct graph of the function $f(x) = \cos(6x)$.

(a)


y
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8
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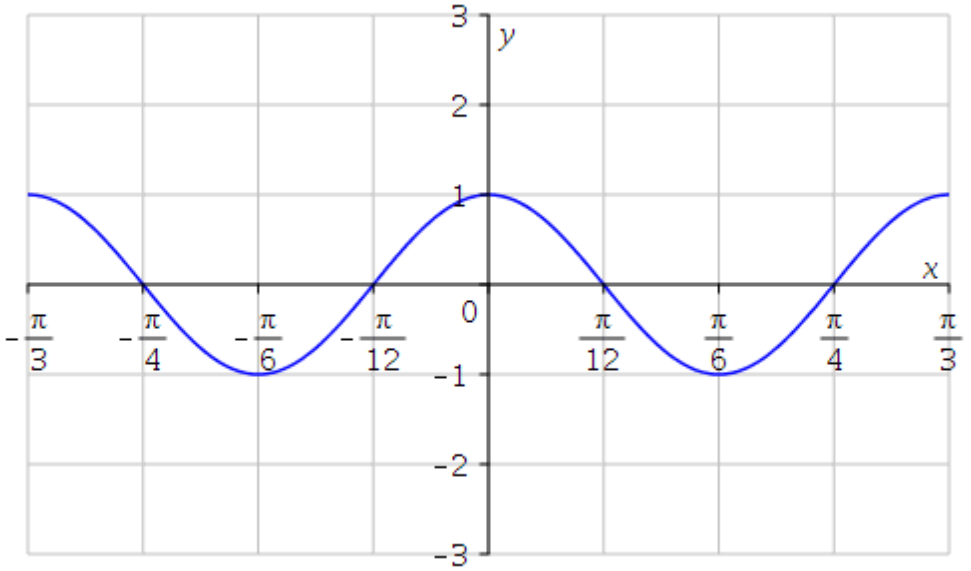
π
3π/2
2 π

(b)


y
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-3
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-π/6
-π/12
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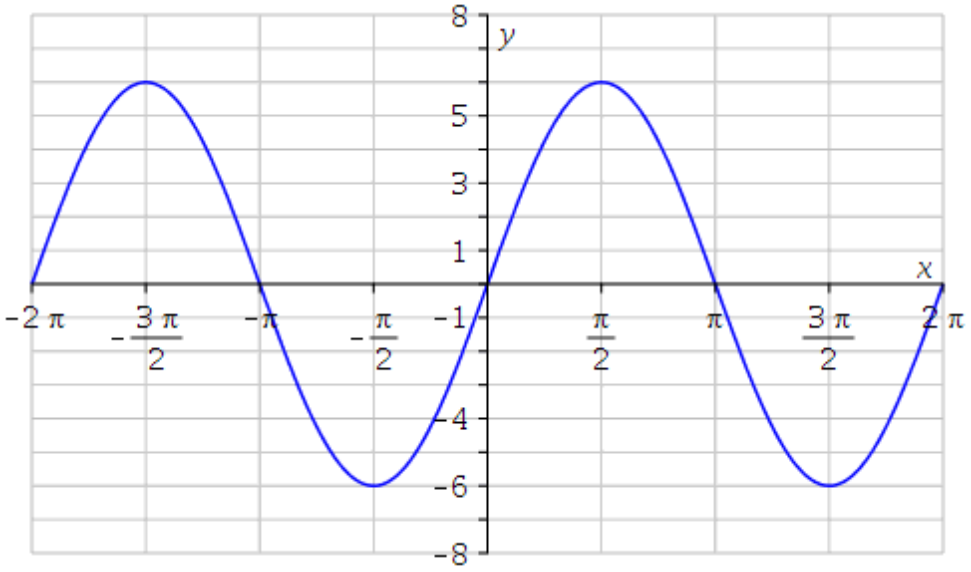
π/6
π/4
π/3

(c)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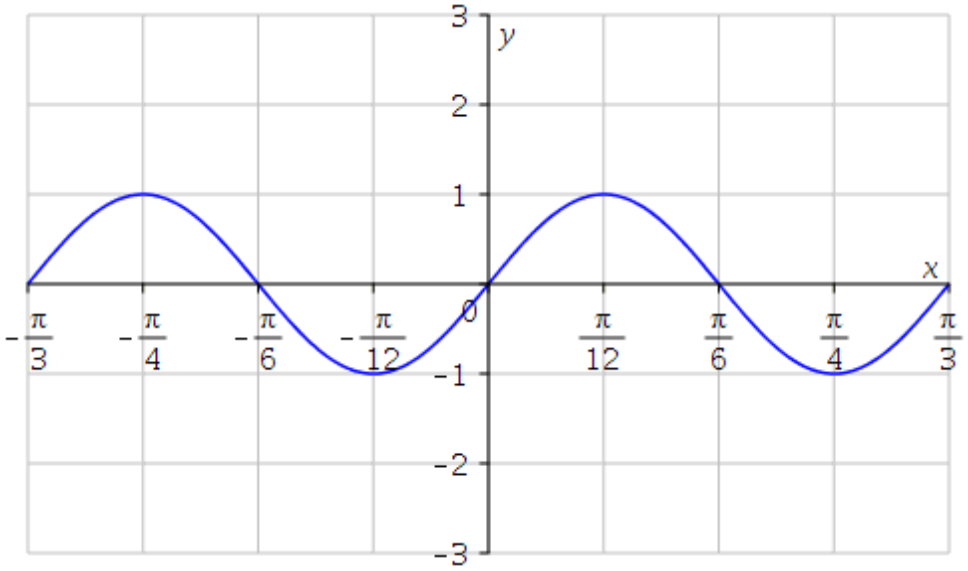
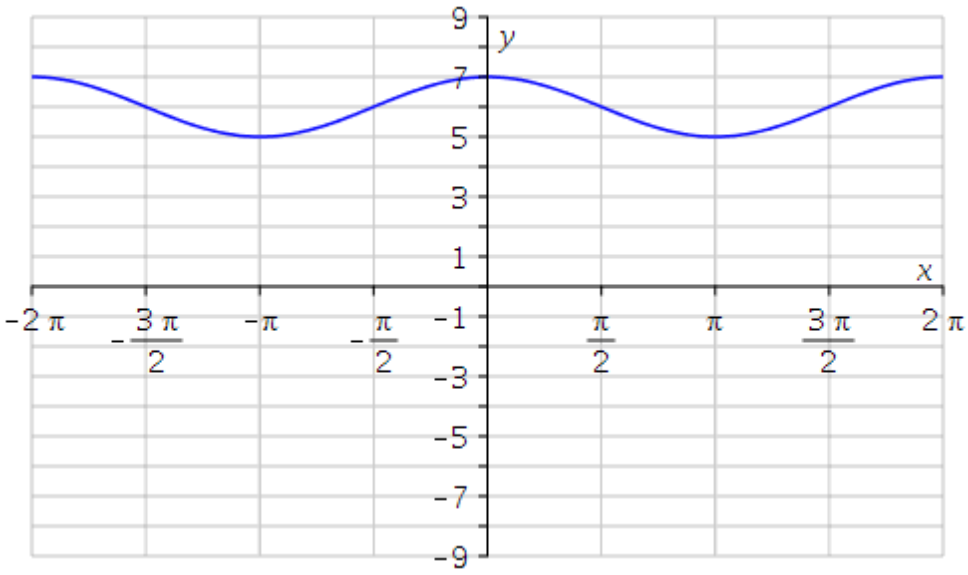
π
3π/2
2 π

(d)



(e)



Show your work and explain, in your own words, how you arrived at your answers.

_____

Question 12: (3 points)

Graph one full period of the function $f(x) = 3\sin\left(\frac{\pi}{3}(x-4)\right) + 7$ starting at $x = 0$, and state the amplitude, period, and midline. State the maximum and minimum y-values and their smallest positive corresponding x-values. State the phase shift and vertical translation.

Enter the exact answers.

Amplitude: $A =$ _____

Period: $P =$ _____

Midline: $y =$ _____

Maximum y-value and smallest positive corresponding x-value:

$x =$ _____

$y =$ _____

Minimum y-value and smallest positive corresponding x-value:

$x =$ _____

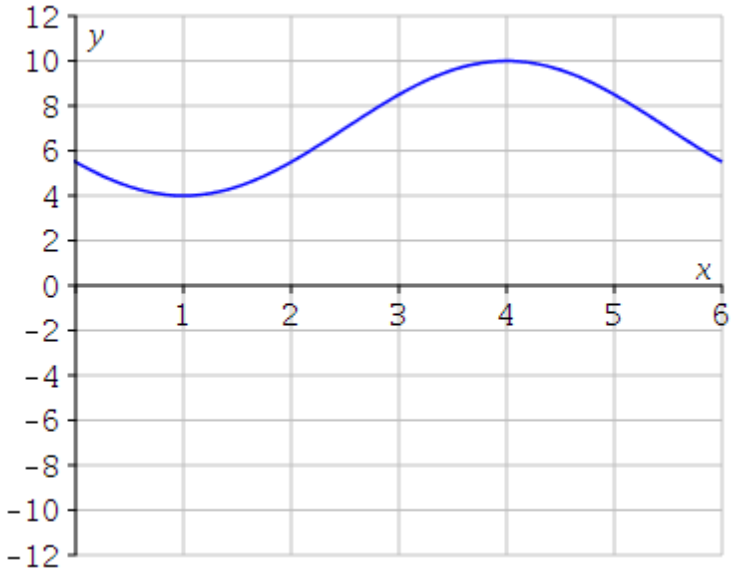
$y =$ _____

The phase shift is _____.

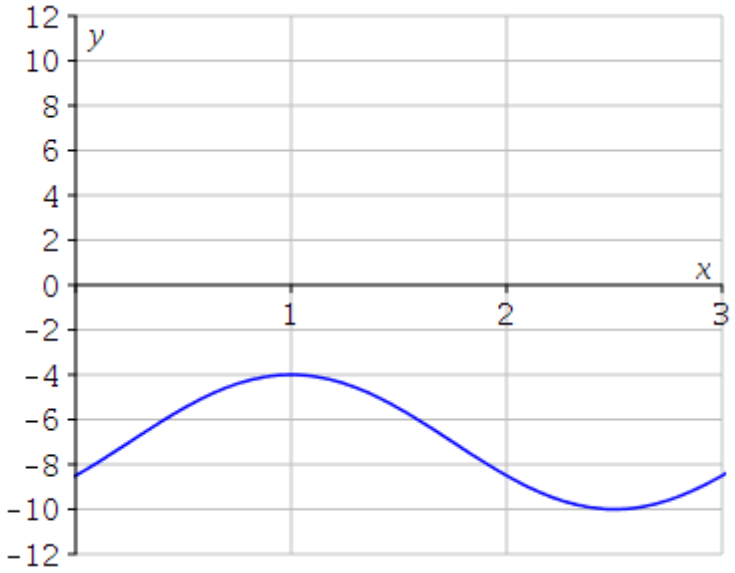
The vertical translation is _____.

Select the correct graph of the function $f(x) = 3\sin\left(\frac{\pi}{3}(x-4)\right) + 7$.

(a)



(b)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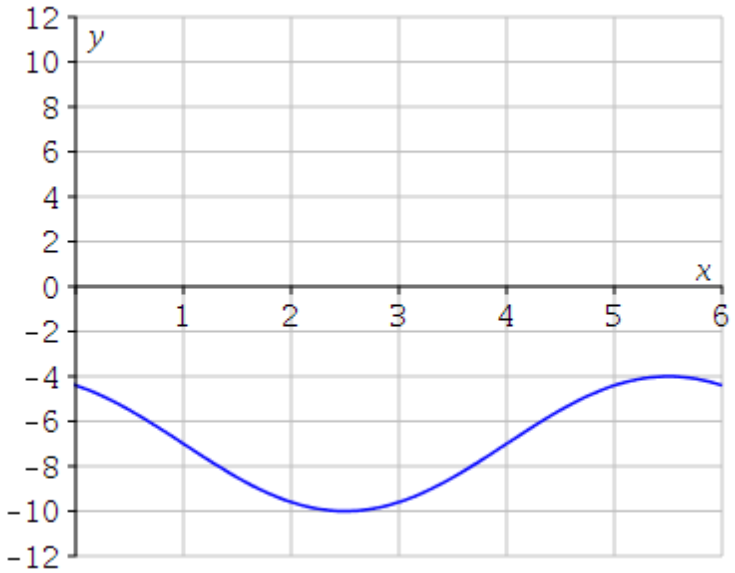
(c)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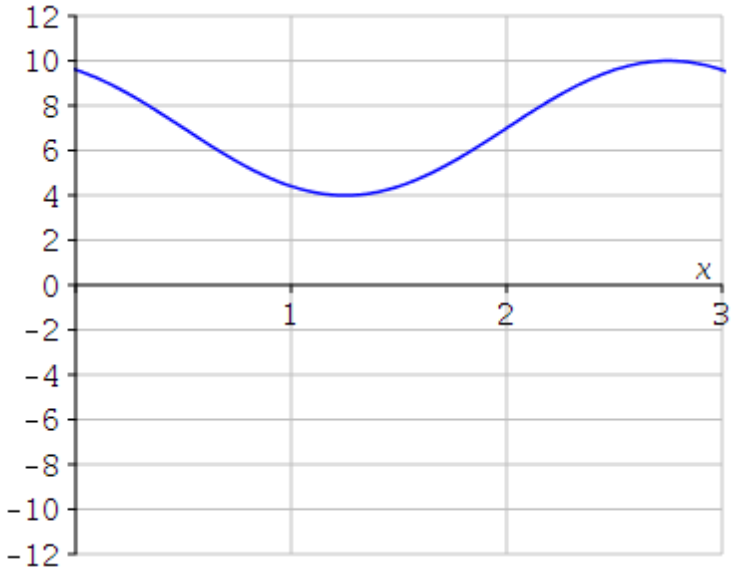
(d)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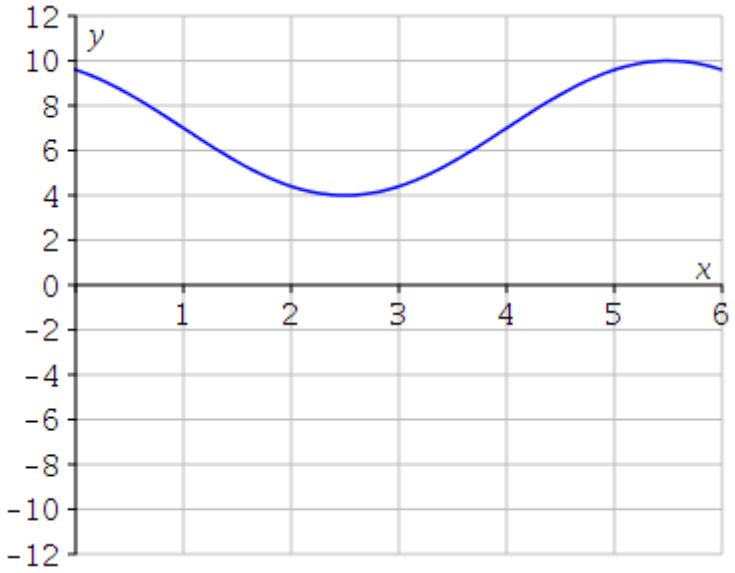
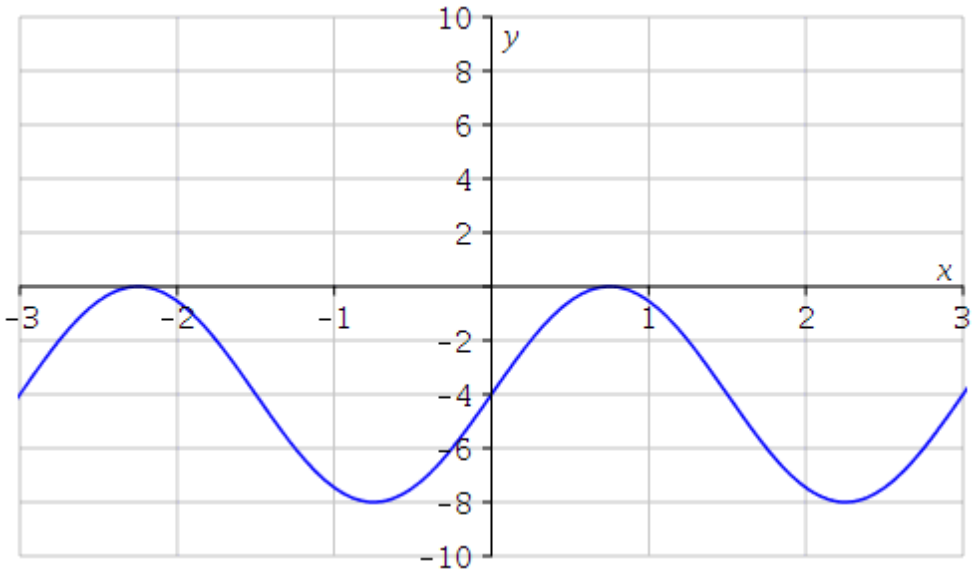
(e)



Question 13: (3 points)

Determine the amplitude, midline, period, and an equation involving the sine function for the graph shown below.



Enter the exact answers.

Amplitude: $A =$ _____

Midline: $y =$ _____

Period:

$P =$ _____

Enclose arguments of functions in parentheses. For example, $\sin(2 * x)$.

Include a multiplication sign between symbols. For example, $a * \pi$.

For the number π, either choose π from the drop-down menu (under α) or type in Pi (with a capital P).

$y =$ _____

Question 14: (3 points)

Let $f(x) = \cos x$. Determine the x-value(s) where the function has a maximum or minimum value on $[0, 2\pi)$.

To enter π, type Pi (with a capital P).

The fields below accept a list of numbers or formulas separated by semicolons (e.g. $2;\ 4;\ 6$ or $x+1;\ x-1$). The order of the lists do not matter.

On $[0, 2\pi)$, the maximum value(s) of the function occur(s) at what x-value(s)?

$x =$ _____

On $[0, 2\pi)$, the minimum value(s) of the function occur(s) at what x-value(s)?

$x =$ _____