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QUESTION 1

Choose the correct answer from the drop-down menu.

Choose the graph of

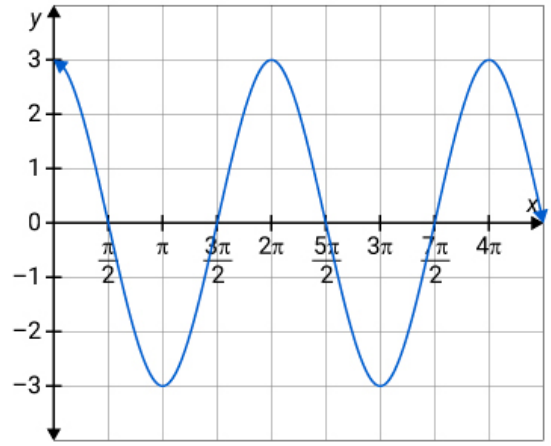
$$y = 3\sin\left(x + \frac{\pi}{2}\right)$$

.

The graph for the sinusoidal function

$$y = 3\sin\left(x + \frac{\pi}{2}\right)$$

is



.

QUESTION 2

Drag and drop the correct statement(s) to complete the sentence.

Use the table below to create an equation that models the height of the Ferris wheel. Let t represent the minutes that have passed since the Ferris wheel took off.

$h =$

$$30\cos\left(\frac{\pi}{2}t - \pi\right) + 30.5$$

$30.5\cos\left(\frac{\pi}{2}t-\pi\right)+30$

$30.5\cos\left(\pi t-\frac{\pi}{2}\right)+30$

$30\cos\left(\pi t-\frac{\pi}{2}\right)+30.5$

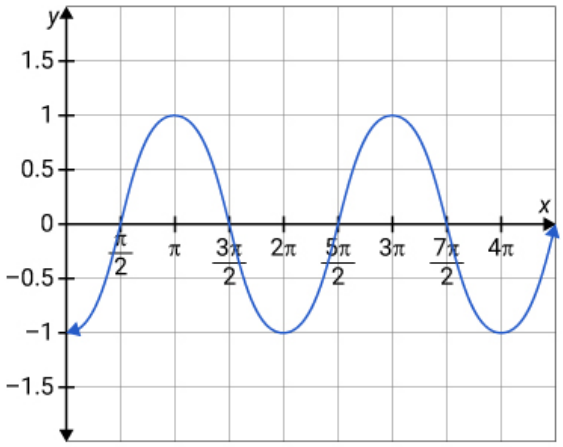
QUESTION 3

Drag and drop the correct statement(s) to complete the sentence.

How is this graph translated from the graph

$y=\cos\ x$

?



The graph is translated π ✓ units

right ✓.

left | down | 1 | $\frac{\pi}{2}$ | up | 2

QUESTION 4

Drag and drop the correct statement(s) to complete the sentence.

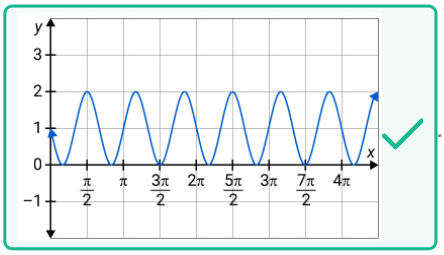
Choose the graph of

$y=\sin\ (3x-\pi)+1$

.

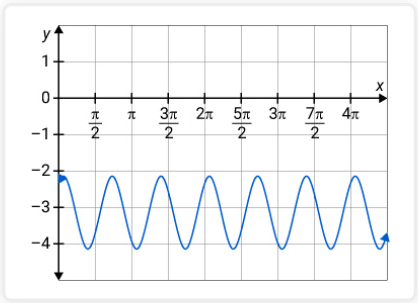
The correct graph for

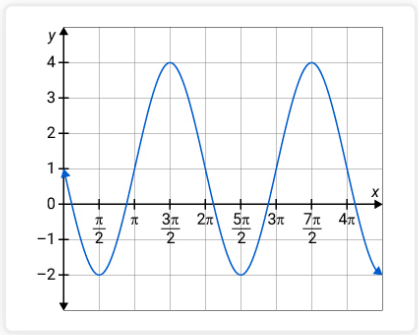
$y=\sin\ (3x-\pi)+1$

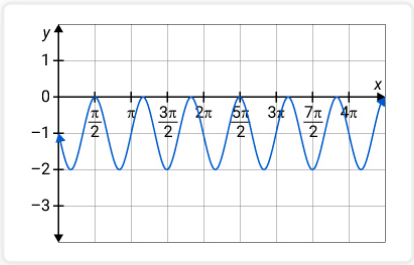
is 

✓.

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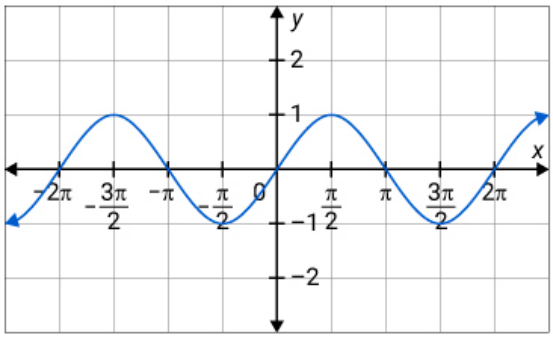
QUESTION 5

Fill in the blank(s) with the correct answer.

How is this graph translated from the graph of

$y = \cos\ x$

?



The graph is shifted $\frac{\pi}{2}$ ✓ units right.

QUESTION 6

Choose the correct answer from the drop-down menu.

Use the table to write an equation that models the average monthly temperatures for Abu Dhabi. Let x represent the month of the year and

$x = 1$

represent January.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
$°C$	18.0	19.1	22.2	26.0	30.6	32.0	33.1	34.0	32	28.7	24.5	20.2

$y =$

$8 \sin\left(\frac{\pi}{6}x - \frac{2\pi}{3}\right) + 26$ ✓

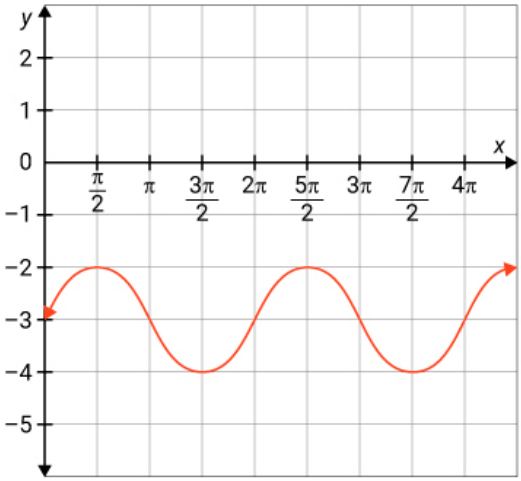
QUESTION 7

Choose the correct answer from the drop-down menu.

How is this graph translated from the graph of

$y = \sin x$

?



This graph is translated 3 ✓ units down ✓.

QUESTION 8

Choose the correct answer from the drop-down menu.

Choose the graph of

$y = 2\cos\left(\frac{x}{2} + \frac{\pi}{3}\right) - 4$

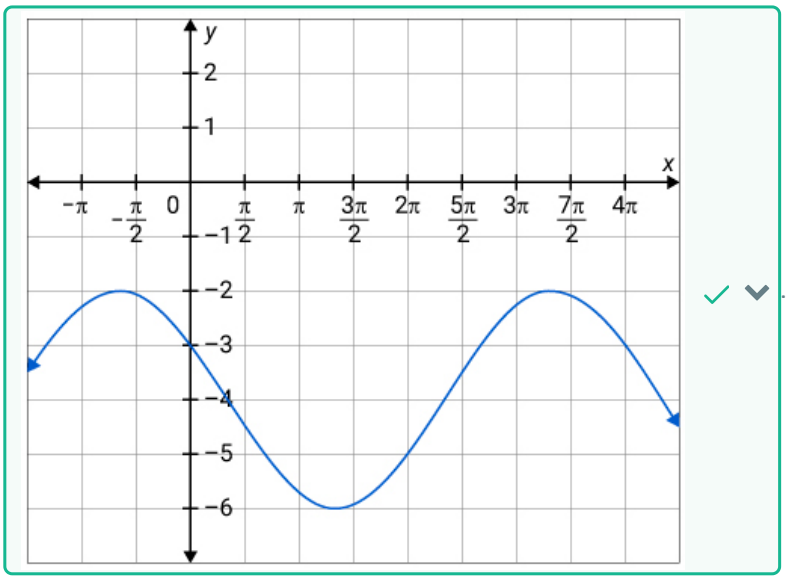
.

The graph of

$y = 2\cos\left(\frac{x}{2} + \frac{\pi}{3}\right) - 4$

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is



.

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QUESTION 9

Select the correct option.

The tide at a certain bay can be modeled by a cosine function. Let x represent the number of hours after low tide. Write an equation to represent the height of the tide using the data from the table.

Hours	Time	Height (m)
0	12:00 a.m.	1.3
3	3:00 a.m.	3.8
6	6:00 a.m.	6.4
9	9:00 a.m.	3.5
12	12:00 p.m.	1.2

- $y = 5.2\cos\left(\frac{\pi}{6}x - \pi\right) + 3.8$
- ◉ $y = 2.6\cos\left(\frac{\pi}{6}x - \pi\right) + 3.8$ ✓
- $y = 2.6\cos\left(\frac{\pi}{2}x - \frac{\pi}{6}\right) + 3.8$

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$y = 5.2\cos\left(\frac{\pi}{2}x - \frac{\pi}{6}\right) + 3.8$

QUESTION 10

Select the correct option.

Write an equation that models the average daily hours of sunlight in a given town. Let x represent the months of the year and $x = 1$ represent January.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hours	9.75	11.0	12.5	13.75	14.75	15.0	14.5	13.5	12.0	10.75	9.5	9.0

$y = 6\sin\left(\frac{3\pi}{2}x - \frac{\pi}{6}\right) + 12$

$y = 3\sin\left(\frac{\pi}{6}x - \frac{3\pi}{2}\right) + 12$ ✓

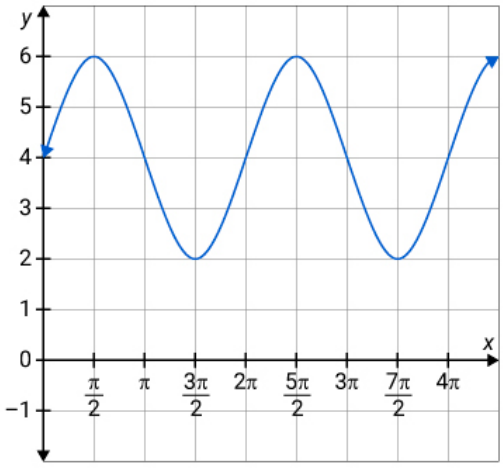
$y = 3\sin\left(\frac{3\pi}{2}x - \frac{\pi}{6}\right) + 12$

$y = 6\sin\left(\frac{\pi}{6}x - \frac{3\pi}{2}\right) + 12$

QUESTION 11

Select the correct option.

How is this graph translated from the graph of $y = \sin x$?



The graph is translated 6 units up and compressed vertically.

The graph is translated 4 units up and expanded vertically. ✓

The graph is translated 6 units down and expanded vertically.

The graph is translated 4 units up and compressed vertically.

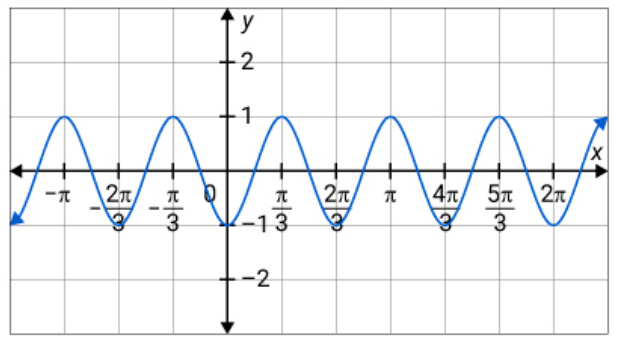
QUESTION 12

Select the correct option.

Choose the graph of

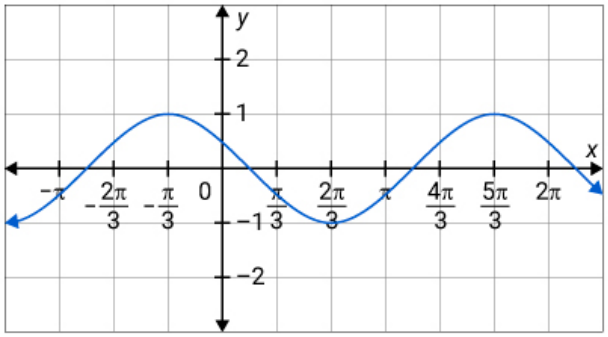
$y = \cos(3x + \pi)$

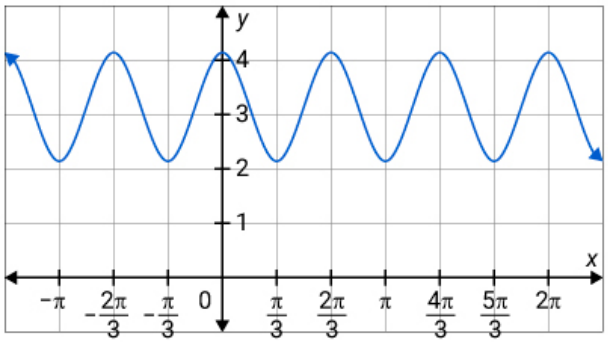
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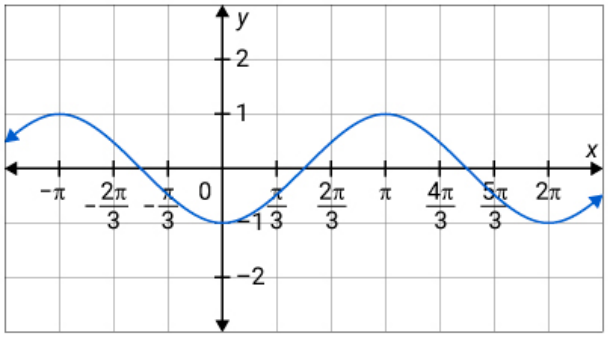


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QUESTION 13

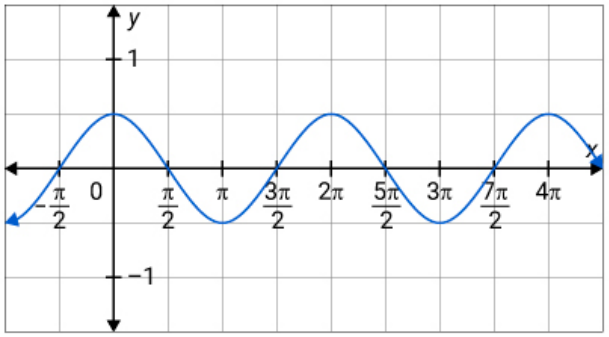
Select the correct option.

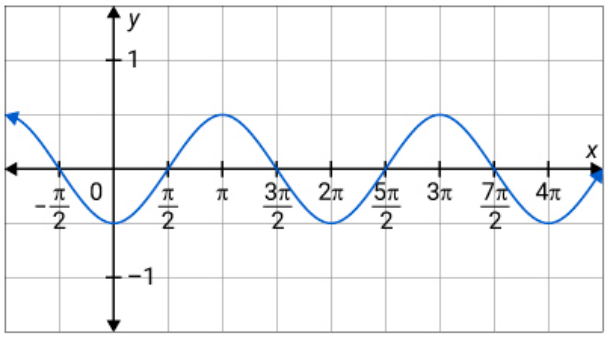
Choose the graph of

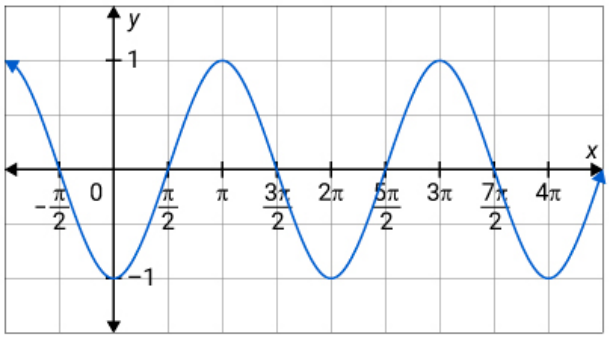
$$y = \frac{1}{2}\sin\left(x - \frac{3\pi}{2}\right)$$

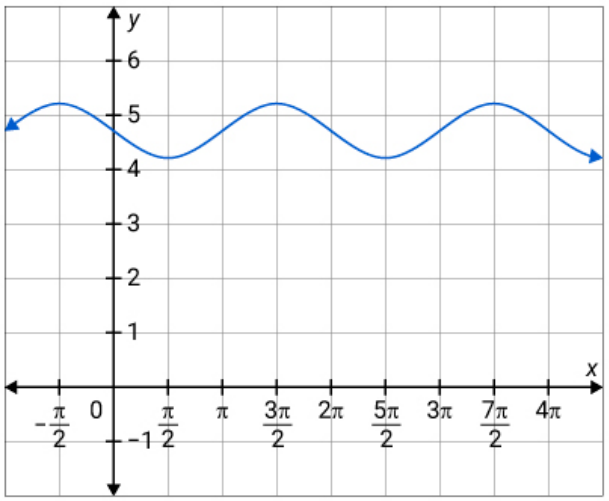
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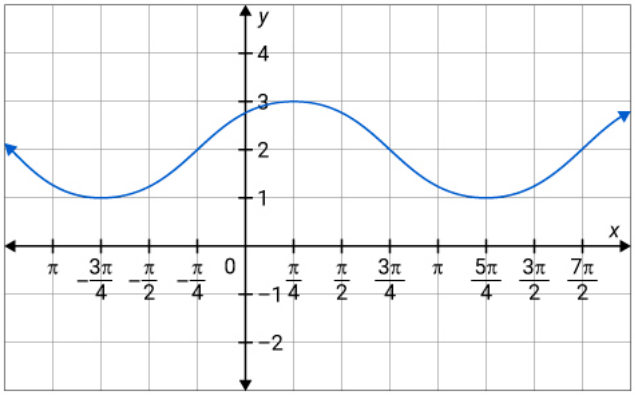
QUESTION 14

Look at the x-axis of this graph. How is this graph transformed from the graph of

$y = \cos\ x$

?

Select all that apply.



- [ ] The graph is translated 2 units down.
- [ ] The graph is translated π units right.
- [x] The graph is translated $\frac{\pi}{4}$ units right. ✓
- [x] The graph is translated 2 units up. ✓
- [ ] The graph is translated $\frac{\pi}{2}$ units right.
- [ ] The graph is translated 3 units up.

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QUESTION 15

Write an equation that models the height above ground of a yo-yo in motion. Let t represent the time the yo-yo has been moving. Once you find the equation, use it to estimate the height of the yo-yo at 10 seconds.

Seconds	0	0.2	0.4	0.6	0.8	1	1.2
Height (m)	1.0	0.85	0.4	0.2	0.4	0.85	1.0

- [ ] $h = 0.6\cos\left(\frac{5\pi}{3}t\right) + 0.4$
- [ ] At 10 seconds, the yo-yo will be 1.0 meters above the ground.
- [ ] $h = \cos\left(\frac{5\pi}{3}t\right) + 0.6$
- [x] $h = 0.4\cos\left(\frac{5\pi}{3}t\right) + 0.6$ ✓
- [ ] At 10 seconds, the yo-yo will be about 0.5 meters above the ground.
- [x] At 10 seconds, the yo-yo will be 0.4 meters above the ground. ✓

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