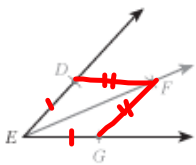


Questions on 6.4 HW? Work on these ACT problems below...

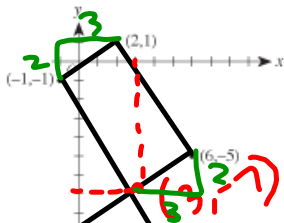
In the figure below, ray \overrightarrow{EF} was constructed starting from rays \overrightarrow{ED} and \overrightarrow{EG} . By using a compass D and G were marked equidistant from E on rays \overrightarrow{ED} and \overrightarrow{EG} . The compass was then used to locate a point F , distinct from E , so that F is equidistant from D and G . For all constructions defined by the above steps, the measures of $\angle DEF$ and $\angle GEF$:



$\triangle EDF \cong \triangle EGF$ (SSS)

- F. are equal.
- G. are NOT equal.
- H. sum to 30° .
- I. sum to 45° .

In the standard (x,y) coordinate plane below, 3 of the vertices of a rectangle are shown. Which of the following is the 4th vertex of the rectangle?



- F. $(3, -7)$
- G. $(4, -8)$
- H. $(5, -1)$
- I. $(8, -3)$
- J. $(9, -3)$

SM3H Module 6 - Student Edition.pdf - Adobe Acrobat Reader DC


File Edit View Window Help

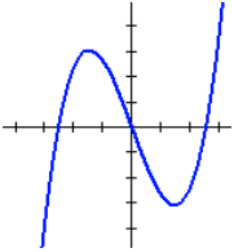
Home Tools SM3H Module 6 - ... x

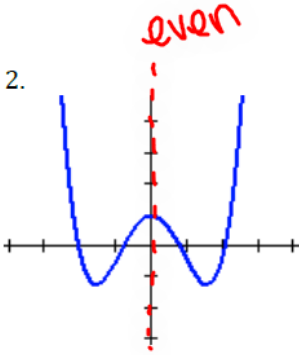
25 / 113 125%

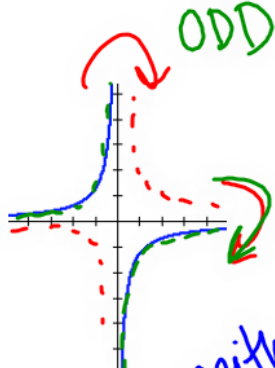
The *graphs* of even and odd functions make it easy to identify the type of function. Remember that an **even** function has a line of symmetry along the y-axis, while an **odd** function has 180° rotational symmetry.

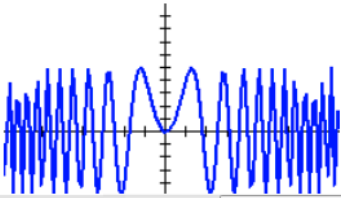
Label the following functions as **even**, **odd**, or **neither**.

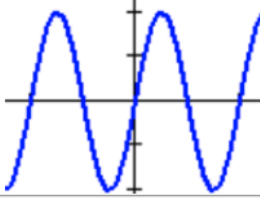


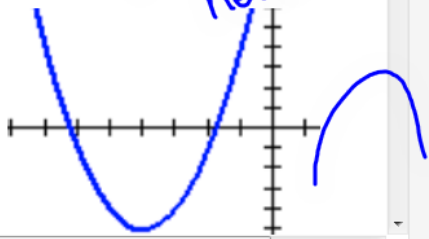
1. 

2. 

3. 

4. 

5. 

6. 

8.50 x 11.00 in

The screenshot shows a window titled "SM3H Module 6 - Student Edition.pdf - Adobe Acrobat Reader DC". The interface includes a menu bar (File, Edit, View, Window, Help), a toolbar with icons for Home, Tools, and various actions, and a page indicator showing "25 / 113" at 125% zoom. The main content area displays three graphs:

- Graph 7:** A piecewise linear graph on a coordinate plane. The x-axis ranges from -4 to 4, and the y-axis from -2 to 2. The graph consists of several connected line segments forming a zig-zag pattern.
- Graph 8:** A smooth, periodic blue sine wave on a coordinate plane.
- Graph 9:** A coordinate plane with a horizontal blue line at $y = 1$ and a horizontal blue line at $y = -1$. Dashed green lines are drawn at $y = 2$ and $y = -2$. A green arrow points from Graph 8 towards Graph 9. Handwritten green text above the graph reads "not even" and "DDD". A green circular arrow is drawn around the y-axis.

At the bottom of the page, the text reads: "Mathematics Vision Project | MVP" and "Licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported license". A small logo consisting of four squares (two red, two grey) is to the right of the text. The status bar at the bottom left shows "8.50 x 11.00 in".

SM3H Module 6 - Student Edition.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools SM3H Module 6 - ... x

26 / 113 125%

Describe the transformation on the parabola in the following equations. $y = x^2$

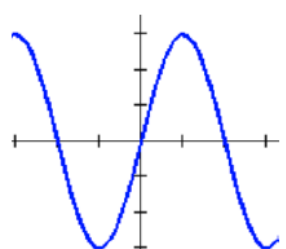
10. $y = x^2 + 5$ 11. $y = x^2 - 1$ 12. $y = -x^2$ 13. $y = 4x^2$

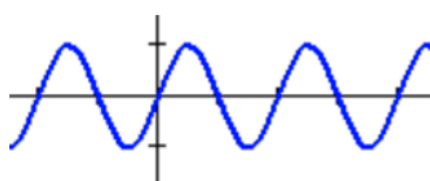
$\uparrow 5$

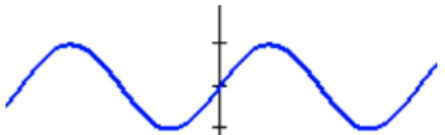
Match the equation with the correct graph. The scale of the x-axis is 90° . The scale of the y-axis is 1.

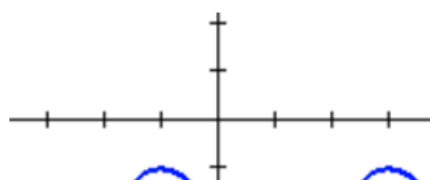
a. $y = \sin 2x$ b. $y = (\sin x) + 2$ c. $y = 3\sin x$

d. $y = -(\sin x) - 2$ e. $y = -2\sin x$ f. $y = 3\sin 2x$

14. 

15. 

16. 

17. 

8.50 x 11.00 in

SM3H Module 6 - Student Edition.pdf - Adobe Acrobat Reader DC

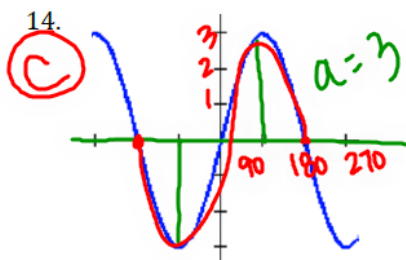
File Edit View Window Help

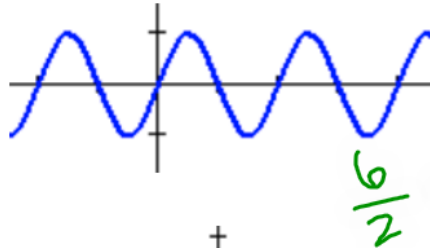
Home Tools SM3H Module 6 - ... x

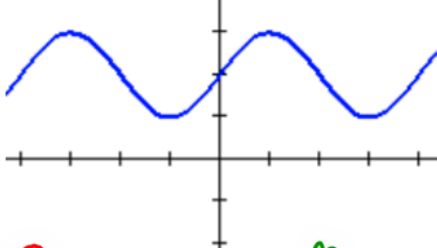
26 / 113 125%

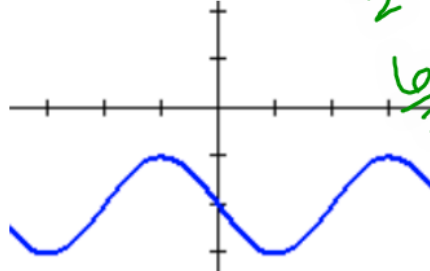
a. $y = \sin 2x$ b. $y = (\sin x) + 2$ c. $y = 3\sin x$ *per 100: 360*

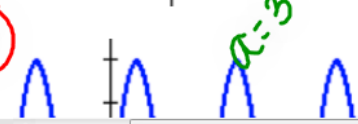
d. $y = -(\sin x) - 2$ e. $y = -2\sin x$ f. $y = 3\sin 2x$ *period: $\frac{360}{2} = 180$*

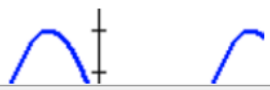
14. *(C)*  *a=3*

15.  *$\frac{6}{2} = 3$*

16. 

17.  *$\frac{6}{3} = 2$*

18. *(F)*  *a=3*

19. 

8.50 x 11.00 in

The image shows a screenshot of a PDF document titled "SM3H Module 6 - Student Edition.pdf" in Adobe Acrobat Reader DC. The document contains four trigonometric graphs labeled 16, 17, 18, and 19. Graph 16 is a blue sine wave with a period of 2 units. Graph 17 is a blue sine wave with a period of 2 units and a phase shift. Graph 18 is a blue sine wave with a period of 2 units, with a red circle around a portion of the wave and the handwritten text "PERIOD = 180". Graph 19 is a blue sine wave with a period of 2 units. Graph 20 is a red circle with a counter-clockwise arrow and a plus sign.

6.5 Moving Shadows

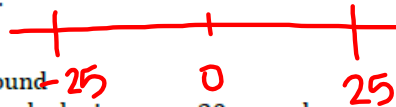
A Practice Understanding Task



In spite of his nervousness, Carlos enjoys his first ride on the amusement park Ferris wheel. He does, however, spend much of his time with his eyes fixed on the ground below him. After a while, he becomes fascinated with the fact that since the sun is directly overhead, his shadow moves back and forth across the ground beneath him as he rides around on the Ferris wheel.

Recall the following facts for the Ferris wheel Carlos is riding:

- The Ferris wheel has a radius of 25 feet
- The center of the Ferris wheel is 30 feet above the ground
- The Ferris wheel makes one complete rotation counterclockwise every 20 seconds

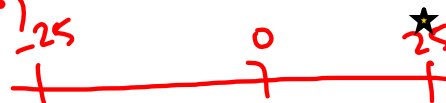


To describe the location of Carlos' shadow as it moves back and forth on the ground beneath him, we could measure the shadow's horizontal distance (in feet) to the right or left of the point directly beneath the center of the Ferris wheel, with locations to the right of the center having positive value and locations to the left of the center having negative values. For instance, in this system Carlos' shadow's location will have a value of 25 when he is at the position farthest to the right on the Ferris wheel, and a value of -25 when he is at a position farthest to the left.

1. What would Carlos' position be on the Ferris wheel when his shadow is located at 0 in this new measurement system?

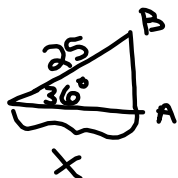
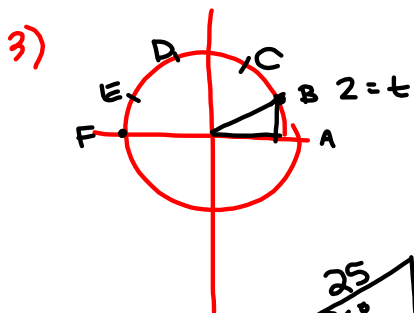
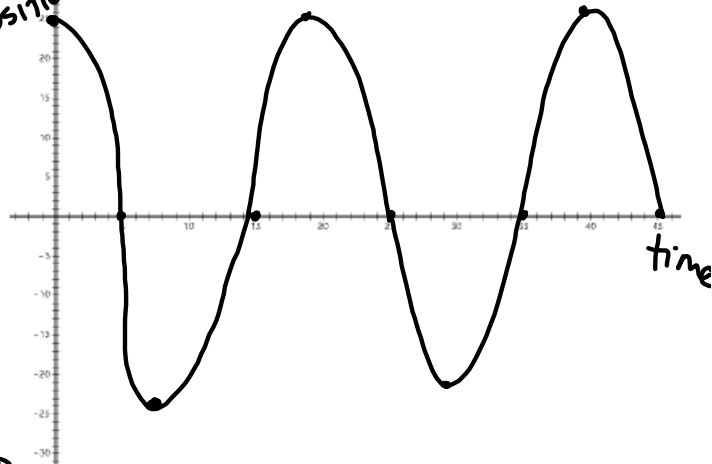


Very top (90°) or very bottom (270°)



2. Sketch a graph of the horizontal location of Carlos' shadow as a function of time t , where t represents the elapsed time after Carlos passes position A, the farthest right position on the Ferris wheel.

Shadow position



$t=2$

$$25 \cdot \cos 36 = \frac{x}{25} \cdot 25$$

$$25 \cos 36 = x$$

$$20.2 = x$$

3. Calculate the location of Carlos' shadow at the times t given in the following table, where t represents the number of seconds since Carlos passed the position farthest to the right on the Ferris wheel. Keep track of any regularities you notice in the ways you calculate the location of the shadow. As you calculate each location, plot Carlos' position on the diagram.

Elapsed time since passing farthest right position	Calculations	Location of the shadow
1 sec	$25 \cos(18)$	23.8
1.5 sec	$25 \cos(27)$	22.3
2 sec	$25 \cos(36)$	20.2
2.5 sec	$25 \cos(18 \cdot 2.5)$	17.7
3 sec	$25 \cos(18 \cdot 3)$	14.7
5 sec	$25 \cos(18 \cdot 5)$	0
6 sec	.	-7.7
8 sec	.	-20.2
9 sec	.	-23.8
10 sec	.	-25
12 sec	.	-20.2
14 sec	.	-7.7
15 sec		0
18 sec		20.2
19 sec		23.8
20 sec		25
23 sec		14.7
28 sec		-20.2
35 sec		0
36 sec		7.7
37 sec		14.7
40 sec		25

5. Write a general formula for finding the location of the shadow at any instant in time.

$$s(t) = 25 \cos(18t)$$

Homework

6.5 "Ready, Set, Go"