Trigonometry End-of-Unit Assessment

Circle the letter of the best answer.

1. Simplify the expression $\frac{1-\sin^2\theta}{\cos\theta}$.

   a. $\frac{1}{\cos\theta}$

   b. $\cos^3\theta$

   c. $\sin\theta$

   d. $\cos\theta$

2. If $0 \le \theta \le 90$ and $\sin\theta = \frac{\sqrt{5}}{6}$, find $\cos\theta$ using a Pythagorean identity.

   a. $\frac{\sqrt{31}}{6}$

   b. $\frac{\sqrt{31}}{36}$

   c. $\frac{\sqrt{5}}{6}$

   d. $\frac{31}{36}$

3. For $\triangle EFG$, $EF = 8$ in, $FG = 5$ in, and $m\angle E = 35°$. What is $m\angle G$?

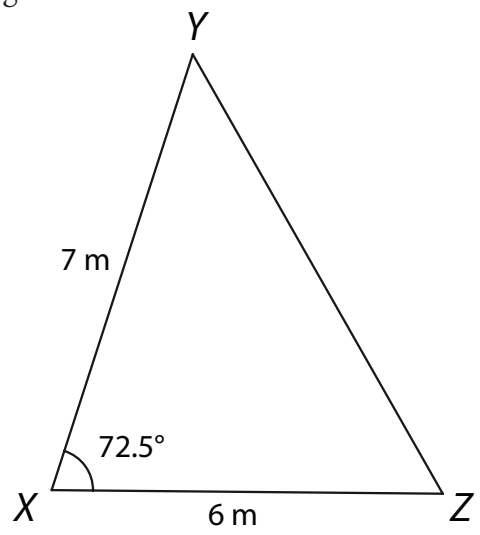
   a. 21°

   b. 67°

   c. 21° and 159°

   d. 67° and 113°

4. What is the measure of angle Y?



   a. 47.7°

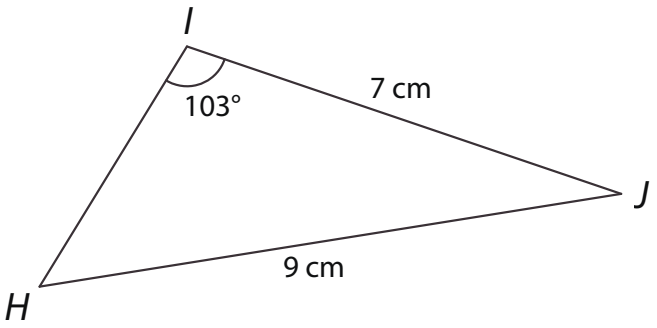
   b. 54.8°

   c. 56.4°

   d. 59.7°

continued

5. What is the area of $\triangle HIJ$?



a. 14.7 cm^2

b. 16.4 cm^2

c. 23.9 cm^2

d. 30.7 cm^2

6. For $\triangle LMN$, $LM = 18$ in, $MN = 12$ in, and $LN = 15$ in. What is the measure of angle L?

a. 41.4°

b. 48.6°

c. 55.7°

d. 82.8°

7. Cedric is trying to determine the distance across a river, so he identifies two trees on opposite banks of the river. He then walks to a distant point F and measures the distance from point F to each of the trees. From point F to the tree on the east bank of the river is 42 feet, and from point F to the tree on the west bank is 59 feet. If $m\angle F = 64°$, how wide is the river?

a. 28.1 feet

b. 55.4 feet

c. 64.5 feet

d. 71.7 feet

8. A 36-foot-tall tree that is leaning toward the sun casts a 40-foot-long shadow when the sun is at a 41° angle of elevation. Approximately how many degrees does the tree lean?

a. 1°

b. 2°

c. 4°

d. 7°

9. A surveyor is trying to measure the width of a lake. He walks to a point far away from the lake and sets up his instruments. He measures the distance from the left side of the lake to his location as 385 feet and the distance from the right side of the lake to his location as 412 feet. He then measures the angle between these two lines of sight as 32°. How wide is the lake?

a. approximately 221 feet

b. approximately 231 feet

c. approximately 387 feet

d. approximately 428 feet

continued

10. Evaluate $\cos\left(\frac{-28\pi}{3}\right)$ without using a calculator.

    a. $\frac{1}{2}$

    b. $-\frac{1}{2}$

    c. $\frac{\sqrt{3}}{2}$

    d. $-\frac{\sqrt{3}}{2}$

11. Without using a calculator, determine if $\cos(\pi + t)$ is even, odd, or neither.

    a. even

    b. odd

    c. neither

    d. It is impossible to determine.

12. If $f(x) = 6\sin(4x + 1) + 2$, what is the amplitude of $f(x)$?

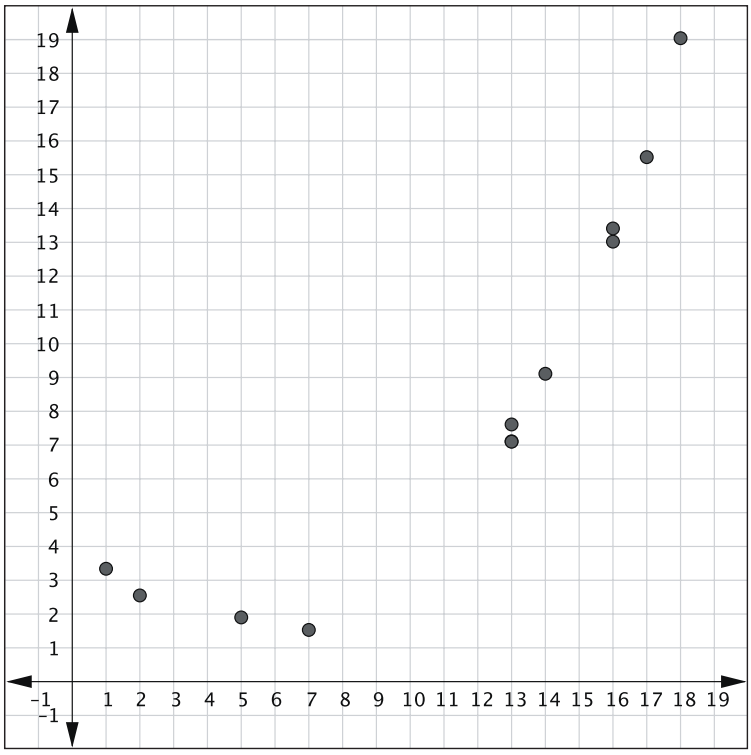
    a. 1

    b. 2

    c. 4

    d. 6

13. What type of function would best model the data in the scatter plot?



    a. linear

    b. logarithmic

    c. sinusoidal

    d. none of these

continued

14. Which function is the best fit for the data in the table?

x	*y*	*x*	*y*
1	6.64	5	0.35
2	6.7	7	5.6
3	5.01	7	6.22
4	2.27	8	7.68
4	2.24	9	5.19
4	2.69	10	3.23

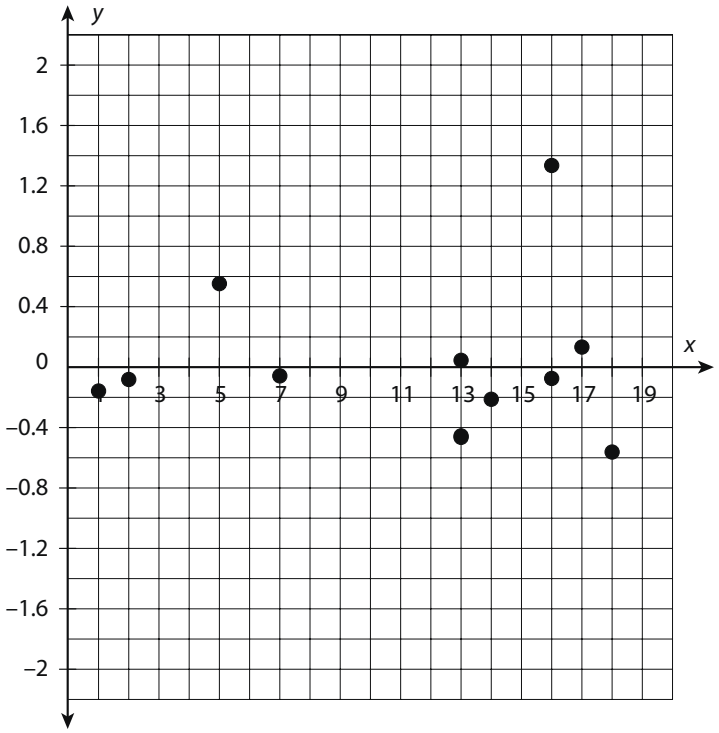
a. $y = 3.15 \sin(0.99x - 0.13) + 4.16$

b. $y = -0.18x + 4.96$

c. $y = 0.12x^2 - 1.53x + 7.78$

d. $y = 5.88 - 1.3 \ln(x)$

15. The following residual plot was created for a sinusoidal regression on a data set. Which statement must be true?



a. A sine function is a good fit for the data.

b. A sine function is not a good fit for the data.

c. A sine function is not a good fit for the data, but a linear function is.

d. A sine function is not a good fit for the data, but a quadratic function is.