Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Precalc trig review

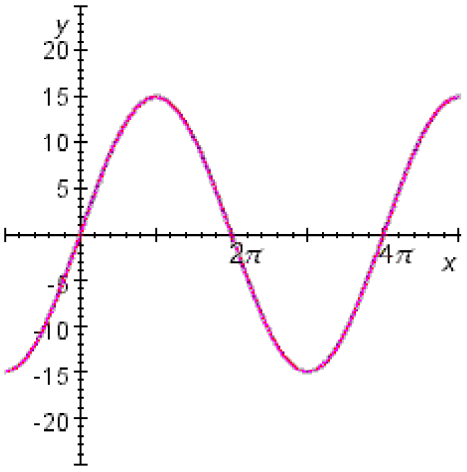
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. A 109 ft tree casts a shadow that is 130 ft long. What is the angle of elevation of the sun?
a. 50°
b. –50°
c. –40°
d. 40°

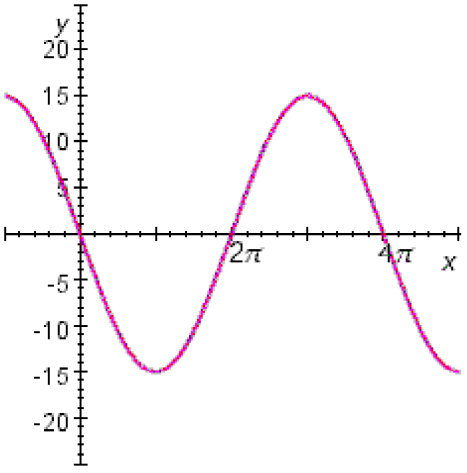
____ 2. Sketch the graph.

$y = 15\sin\frac{1}{2}x$

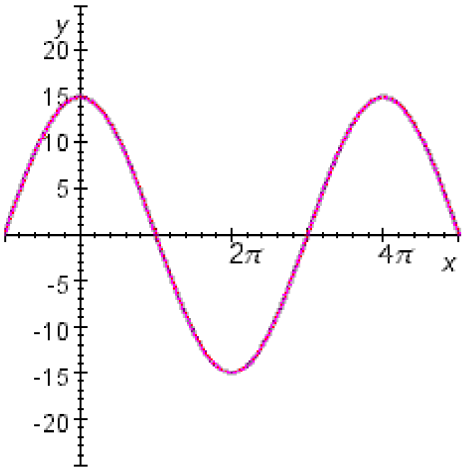
a.



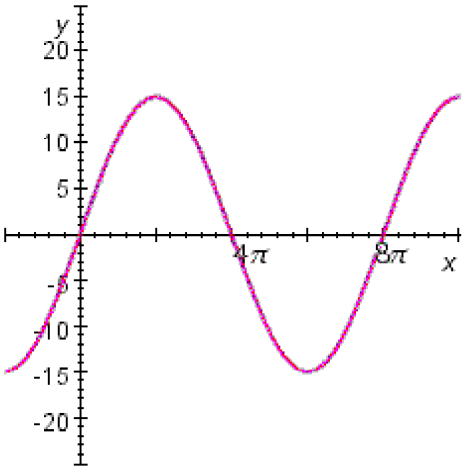
b.



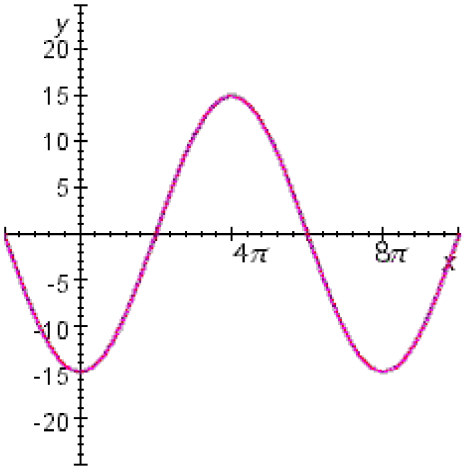
c.



d.



e.



____ 3. Find the degree measure of the angle: $\frac{\pi}{15}$ rad.

a. 12°
b. 6°
c. 16°
d. 27°

____ 4. Choose the value of the trigonometric function cos θ using the information:$\sin\theta = \frac{1}{5}$, θ in quadrant I.

a. $-\frac{\sqrt{24}}{5}$
b. No correct answer
c. $\frac{\sqrt{24}}{5}$

____ 5. Find the equivalent expression.

$\cot^2\theta + 1$
a. $\cot^2\theta\cos^2\theta$
b. $\tan^2\theta\sin^2\theta$
c. $\tan^2\theta\sec^2\theta$
d. $\tan^2\theta\csc^2\theta$
e. $\cot^2\theta\sec^2\theta$

____ 6. Write the following trigonometric expression in terms of sine and cosine, and then simplify.

$\sin^2 x\,(1 + \cot^2 x)$
a. $\sin x$
b. 1
c. $\cot x$
d. $\cos x$

____ 7. Simplify the following trigonometric expression as much as possible.

$\frac{\cot x \sec x}{\csc x}$
a. 1
b. $\cot x$
c. $\sec x$
d. $\csc x$

____ 8. Simplify the following trigonometric expression as much as possible.

$\frac{1-\cos x}{\sin x} + \frac{\sin x}{1-\cos x}$
a. $2\csc x$
b. $\cos x$
c. $2\sin x$
d. $\sin x$

____ 9. Find the exact value of the expression.

$\cos^{-1} \frac{\sqrt{3}}{2}$

a. $\frac{\pi}{3}$

b. $\frac{\pi}{6}$

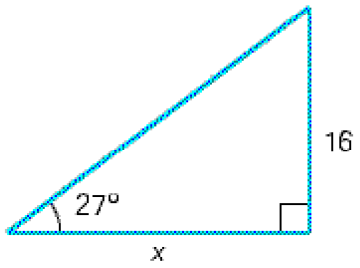
c. 0

d. $\frac{\pi}{2}$

e. $\frac{1}{3}$

Numeric Response

10. Find the side labeled *x*. State your answer correct to five decimal places.



x = _____

11. From the top of a 210-ft lighthouse, the angle of depression to a ship in the ocean is 15°.

How far is the ship from the base of the lighthouse? Please round the answer to the nearest foot.

_____ ft

12. Find the exact value of the trigonometric function at the given real number.

$\csc \frac{3\pi}{2}$

13. Find the exact value of the trigonometric function at the given real number.

$\sec(-4\pi)$

14. Use a graphing device to find the solutions of the equation, correct to two decimal places.

$3^{\sin x} = 2x$

$x =$ _____

Short Answer

15. Find the exact value of the expression, if it is defined.

$\tan^{-1}\left(2\cos\frac{\pi}{3}\right)$

16. Evaluate the expression by sketching a triangle.

$\cot\left(\sin^{-1}\frac{6}{7}\right)$

17. Rewrite the expression as an algebraic expression in x.

$\cos\left(\sin^{-1}x\right)$

18. Find all solutions of the equation.

$2\cos x + 1 = 0$

19. Find all solutions of the equation.

$\tan x \sin x + \sin x = 0$

20. Use a double- or half-angle formula to solve the equation in the interval $\left[0, 2\pi\right)$.

$\tan a + \cot a = 4\sin 2a$

Precalc trig review
Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1
2. ANS: A PTS: 1
3. ANS: A PTS: 1
4. ANS: C PTS: 1
5. ANS: E PTS: 1
6. ANS: B PTS: 1
7. ANS: A PTS: 1
8. ANS: A PTS: 1
9. ANS: B PTS: 1

NUMERIC RESPONSE

10. ANS: 31.40177

    PTS: 1
11. ANS: 784

    PTS: 1
12. ANS: -1

    PTS: 1
13. ANS: 1

    PTS: 1
14. ANS: 1.50

    PTS: 1

SHORT ANSWER

15. ANS:
    $\frac{\pi}{4}$

    PTS: 1
16. ANS:
    $\frac{\sqrt{13}}{6}$

    PTS: 1

17. ANS:
$\sqrt{1-x^2}$

PTS: 1

18. ANS:
$x = \frac{2\pi}{3} + 2k \cdot \pi, \ \frac{4\pi}{3} + 2k \cdot \pi$

PTS: 1

19. ANS:
$x = k \cdot \pi, \ \frac{3\pi}{4} + k \cdot \pi$

PTS: 1

20. ANS:
$\frac{\pi}{8}, \frac{3\pi}{8}, \frac{5\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{11\pi}{8}, \frac{13\pi}{8}, \frac{15\pi}{8}$

PTS: 1