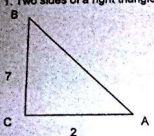
AFM Unit 5 Test Review

KEY

1. Two sides of a right triangle ABC are given (not drawn to scale). Find the ratios in reduced radical form.



sin A = $\frac{7\sqrt{53}}{53}$ csc A = $\frac{\sqrt{53}}{7}$

cos A = $\frac{2\sqrt{53}}{53}$ sec A = $\frac{\sqrt{53}}{2}$

tan A = $\frac{7}{2}$ cot A = $\frac{2}{7}$

2. Determine the remaining 4 trig ratios given that $\cos\theta = \frac{3}{4}$. Draw a triangle and label accordingly.

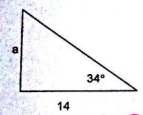
tanθ = $\frac{\sqrt{7}}{3}$ cscθ = $\frac{4\sqrt{7}}{7}$ cotθ = $\frac{3\sqrt{7}}{7}$ secθ = $\frac{4}{3}$

Use a calculator to find the value of the trig function to two decimal places. **Use the correct mode.**

3. sin 79° .98

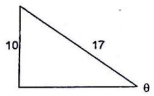
4. csc 79° 1.02

5. Find the measure of side 'a'.



9.44

6. Use a calculator to find the measure of θ



86°

7. A building 240 feet tall casts a 30 foot long shadow. If a person stands at the end of the shadow and looks up to the top of the building, what is the angle of the person's eyes to the top of the building (to the nearest hundredth of a degree)? Assume the person's eyes are 4 feet above ground level.

D

A) 82.88° B) 82.70° C) 7.30° (D) 82.76°

8. A radio transmission tower is 200 feet tall. How long should a guy wire be if it is to be attached 14 feet from the top and is to make an angle of 23° with the ground? Give your answer to the nearest tenth of a foot.

A

(A) 476.0 ft B) 217.3 ft C) 202.1 ft D) 511.9 ft

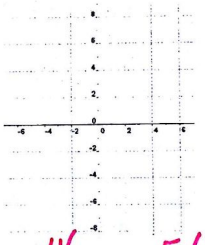
9. A straight trail with a uniform inclination of 11° leads from a lodge at an elevation of 700 feet to a mountain lake at an elevation of 5200 feet. What is the length of the trail (to the nearest foot)?

A

(A) 23,584 ft B) 27,252 ft C) 5,297 ft D) 4,584 ft

The point on the terminal side of angle θ is given. Graph the point to draw a triangle; then find the exact value of the six trigonometric ratios of θ.

10. (6, 8)

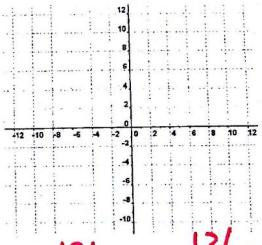


sinθ = $\frac{4}{5}$ cscθ = $\frac{5}{4}$

cosθ = $\frac{3}{5}$ secθ = $\frac{5}{3}$

tanθ = $\frac{4}{3}$ cotθ = $\frac{3}{4}$

11. (-5, 12)



sinθ = $\frac{12}{13}$ cscθ = $\frac{13}{12}$

cosθ = $\frac{-5}{13}$ secθ = $\frac{-13}{5}$

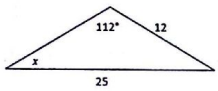
tanθ = $\frac{-12}{5}$ cotθ = $\frac{-5}{12}$

KEY

II. Determine whether the Law of Cosines or the Law of Sines is the best choice.

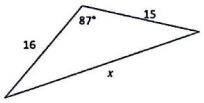
1. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

LOS



2. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

LOC

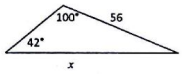


3. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

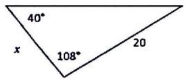
LOC

4. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

LOS

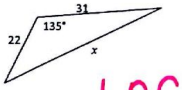


5. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).



LOS

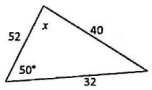
6. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).



LOC

LOS

7. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).



LOC

8. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

For ΔABC find the length of b to the nearest hundredth, given $a = 17, c = 34$, and $m\angle B = 94°$.

LOS

9. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

For ΔHJK, $j = 31$, $m\angle H = 132°$, $m\angle J = 21°$, and $m\angle K = 27°$. Find h to the nearest whole number.

10. State whether the Law of Sines or Law of Cosines is the best choice to solve for x for the given figure. Substitute the values into the appropriate formula (do not solve).

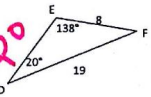
LOC

For ΔXYZ find the length of $m\angle Y$ to the nearest whole degree, given $x = 6, y = 9$, and $z = 12$.

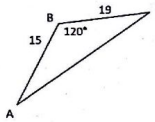
III. Use the Law of Sines and Law of Cosines to find missing dimensions.

11. Find the missing dimensions of the triangle below. Round your answers to the nearest whole number.

f = 3
F = 22°

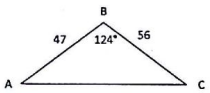


12. Find the $m\angle C$ to the nearest whole degree.



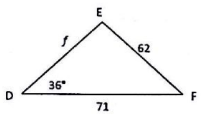
C = 26°

13. Find the missing dimensions of the triangle below. Round your answers to the nearest whole number.



b = 91
A = 31°
C = 25°

14. Find the f to the nearest whole number.



f = 103 or 11

AFM: Trigonometry Unit Test Review

Name Key

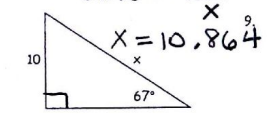
Date _____

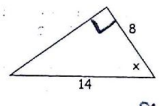
I. Solve each of the following in your calculator. Round your answers to the nearest hundredth.

1. sin (102°) .978
2. cos (-31°) .857
3. tan (175°) −.087
4. tan (90°) undefined
5. sin (x) = 0.78 51.261°
6. cos (x) = -0.36 111.100°
7. tan (x) = 8.75 83.480°

II. Find the missing sides and/or angles using SOH CAH TOA. **Angles are right as they appear.

8. $\sin 67 = \frac{10}{x}$ $x = 10.864$

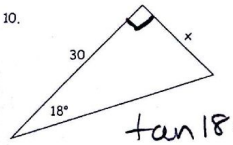




$\cos x = \frac{8}{14}$

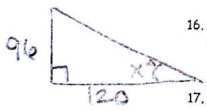
$x = 55.150°$

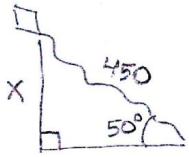
10.



$\tan 18 = \frac{x}{30}$

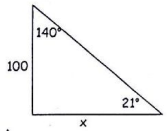
$x = 9.748$





III. Solve each of the following using Law of Sines or Law of Cosines.

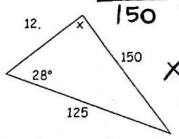
11.



$\frac{\sin 21}{100} = \frac{\sin 140}{x}$

$x = 179.365$

12.

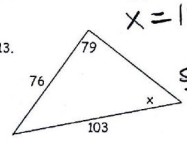


$\frac{\sin 28}{150} = \frac{\sin x}{125}$

$x = 41.047°$

$c^2 = 120^2 + 67^2 - 2(120)(67)\cdot \cos 88$

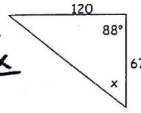
13.



$\frac{\sin 79}{103} = \frac{\sin x}{76}$

$x = 46.411$

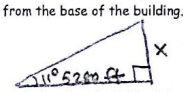
14.



$C = 135.380$

IV. Applications. Solve each of the following using Pythagorean Theorem, SOH CAH TOA, Law of Sines and/or Law of Cosines.

15. The angle of elevation to the top of the Empire State Building in New York is 11° from a point on the ground 1 mile from the base of the building. Find the height of the Empire State Building in feet.



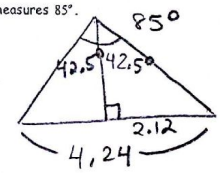
$\tan 11 = \frac{x}{5280}$

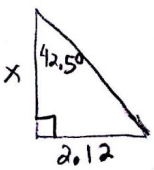
$x = 1026.328$ ft

16. A 96 foot tree casts a shadow that is 120 feet long. What is the angle of elevation of the sun? $\tan x = \frac{96}{120}$ $x = 38.66°$

17. A man is lying on the beach, flying a kite. He holds the end of the kite string at ground level and estimates the angle of elevation of the kite to be 50°. If the string is 450 feet long, how high is the kite above the ground? $\sin 50 = \frac{x}{450}$ 344.72 ft

18. Find the altitude of an isosceles triangle with base 4.24 feet. The vertex angle of the triangle measures 85°.





$\tan 42.5 = \frac{2.12}{x}$ $x = 2.314$