

Honors Unit 8 Test Review

Name: Key

I. Evaluate or solve the following trigonometric functions

1. $\sin(55)$

.819

2. $\tan(37)$

.754

3. $\cos(177)$

-.999

4. $\cos(x) = 42$

undefined

5. $3\sin(x) = 195$ $\sin(x) = 65$

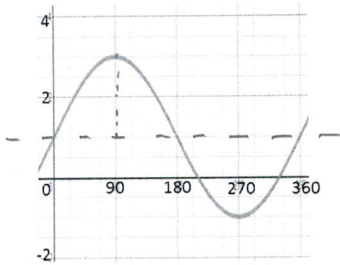
undefined

6. $2\tan(x) - 1 = 56$

$2\tan(x) = 57$
 $\tan(x) = 28.5$
 $x = 88^\circ$

II. Identify the midline and amplitude from the following graphs. Then write the equation of the curve.

7.

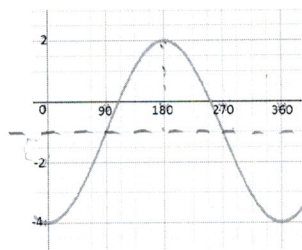


Amp: 2

Midline: $y=1$

Eq: $y=2\sin(x)+1$

8.

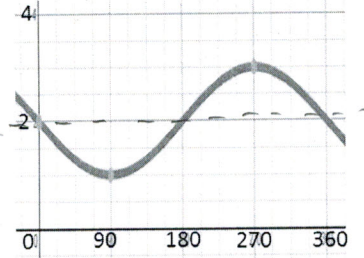


Amp: 3

Midline: $y=-1$

Eq: $y=-3\cos(x)-1$

9.

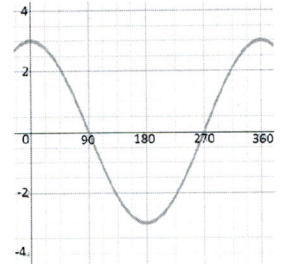


Amp: 1

Midline: $y=2$

Eq: $-\sin(x)+2$

10.



Amp: 3

Midline: $y=0$

Eq: $y=3\cos(x)$

III: Identify the amplitude and midline from the following equations

11. $y = -\sin(x) + 2$

amp = 1

mid = $y=2$

12. $y = 3\cos(x) + 5$

amp: 3

mid: $y=5$

13. $y = -2\sin(x) - 7$

amp = 2

mid: $y=-7$

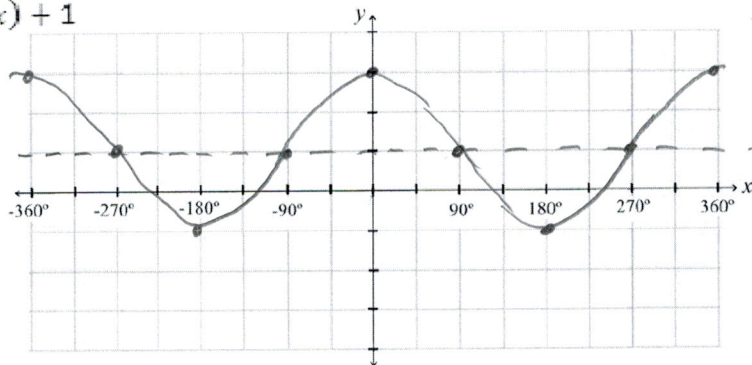
14. $y = 4\cos(x)$

amp = 4

mid: $y=0$

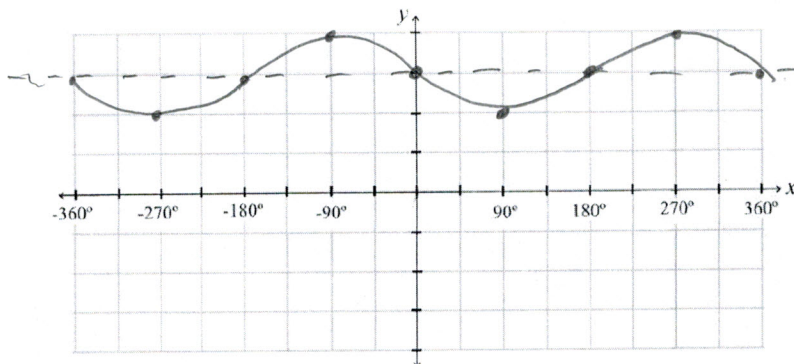
IV. Graph the following and identify the amplitude and midline of each graph.

15. $y = 2\cos(x) + 1$



Amplitude: 2 Midline: $y=1$

16. $y = -\sin(x) + 3$



Amplitude: 1 Midline: $y=3$

V. Mixed Triangles: Pythagorean Theorem, SOHCAHTOA Sides and Angles, and Law of Sines and Cosines

Area of a Triangle Formula: $A = \frac{1}{2} ab \sin(c)$

AAS and ASA Triangles

Law of Sines $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

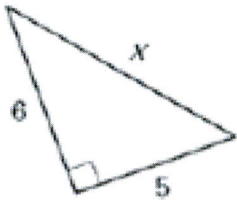
SSS and SAS Triangles

Law of Cosines $b^2 = a^2 + c^2 - 2ac \cdot \cos B$

$a^2 = b^2 + c^2 - 2bc \cdot \cos A$

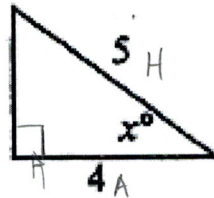
$c^2 = a^2 + b^2 - 2ab \cdot \cos C$

17. Solve for x



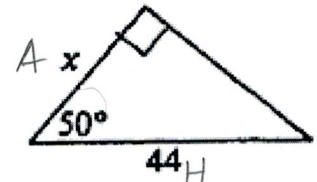
$$\begin{aligned} x^2 &= 5^2 + 6^2 \\ x^2 &= 25 + 36 \\ x^2 &= 61 \\ x &= \sqrt{61} = 7.81 \end{aligned}$$

18. Solve for x



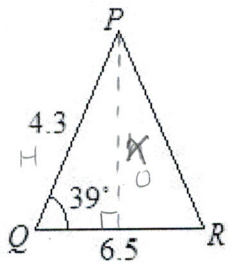
$$\begin{aligned} \cos x &= \frac{4}{5} \\ x &= \cos^{-1}\left(\frac{4}{5}\right) \\ x &= 36.87^\circ \end{aligned}$$

19. Solve for x



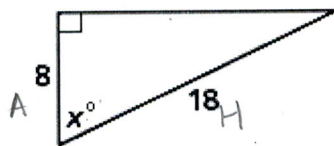
$$\begin{aligned} \cos 50 &= \frac{x}{44} \\ x &= 44 \cos 50 \\ x &= 28.28 \end{aligned}$$

20. Find the area of the ΔPQR



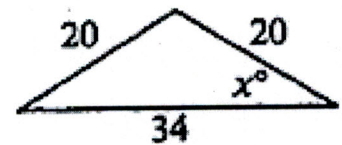
$$\begin{aligned} \sin 39 &= \frac{x}{4.3} \\ x &= 4.3 \sin 39 \\ A &= \frac{1}{2} (6.5)(4.3) \sin 39 \\ A &= 8.79 \end{aligned}$$

21. Solve for x



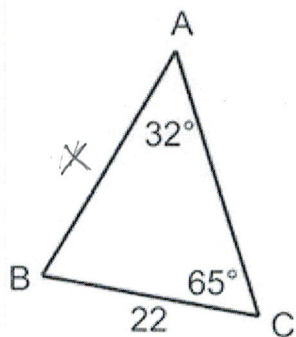
$$\begin{aligned} \cos x &= \frac{8}{18} \\ x &= \cos^{-1}\left(\frac{8}{18}\right) \\ x &= 63.61^\circ \end{aligned}$$

22. Solve for x



$$\begin{aligned} 20^2 &= 20^2 + 34^2 - 2(20)(34) \cos x \\ 400 &= 400 + 1156 - 1360 \cos x \\ 400 &= 1556 - 1360 \cos x \\ -1156 &= -1360 \cos x \\ \cos x &= \frac{1156}{1360} \\ x &= 31.79^\circ \end{aligned}$$

23. Find the length of side AB

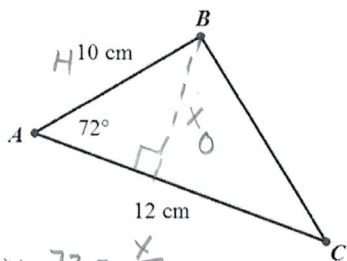


$$\frac{\sin 65}{x} = \frac{\sin 32}{22}$$

$$x \sin 32 = 22 \sin 65$$

$$x = \frac{22 \sin 65}{\sin 32} = 37.63$$

26. Find the area of $\triangle ABC$.



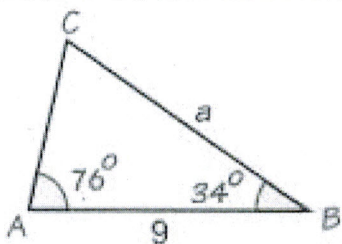
$$\sin 72 = \frac{x}{10}$$

$$x = 10 \sin 72$$

$$A = \frac{1}{2} (12) (10 \sin 72)$$

$$A = 57.06 \text{ cm}^2$$

29. Find the measure of side a.



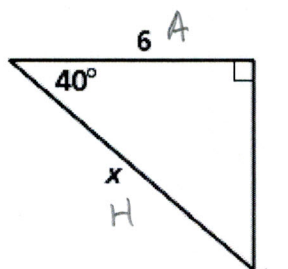
$$m \angle C = 180 - 76 - 34 = 70$$

$$\frac{\sin 70}{9} = \frac{\sin 76}{a}$$

$$a \sin 70 = 9 \sin 76$$

$$a = \frac{9 \sin 76}{\sin 70} = 9.29$$

24. Solve for x

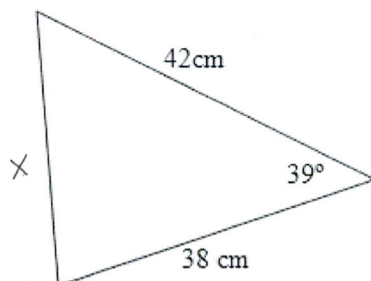


$$\cos 40 = \frac{6}{x}$$

$$x = \frac{6}{\cos 40}$$

$$x = 7.83$$

27. Solve for the missing side



$$x^2 = 38^2 + 42^2 - 2(38)(42) \cos 39$$

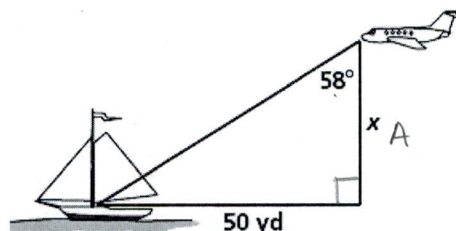
$$= 1444 + 1764 - 3192 \cos 39$$

$$= 3208 - 3192 \cos 39$$

$$x^2 = 727.33$$

$$x = 26.97 \text{ cm}$$

30. Solve for x

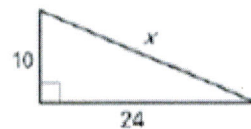


$$\tan 58 = \frac{50}{x}$$

$$x = \frac{50}{\tan 58}$$

$$x = 31.24 \text{ yd}$$

25. Solve for x



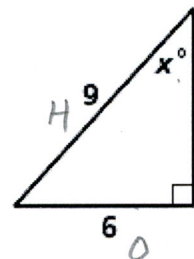
$$x^2 = 10^2 + 24^2$$

$$= 100 + 576$$

$$x^2 = 676$$

$$x = 26$$

28. Solve for x

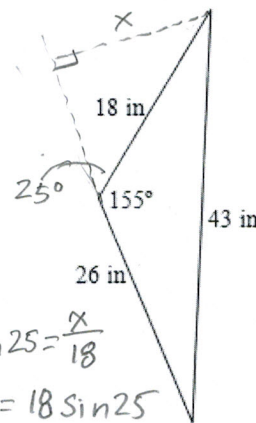


$$\sin x = \frac{6}{9}$$

$$x = \sin^{-1} \left(\frac{6}{9} \right)$$

$$x = 41.81^\circ$$

31. Find the area of the triangle.



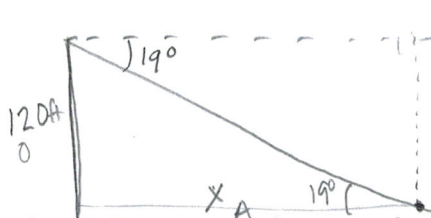
$$\sin 25 = \frac{x}{18}$$

$$x = 18 \sin 25$$

$$A = \frac{1}{2} (26) (18 \sin 25)$$

$$A = 98.89 \text{ in}^2$$

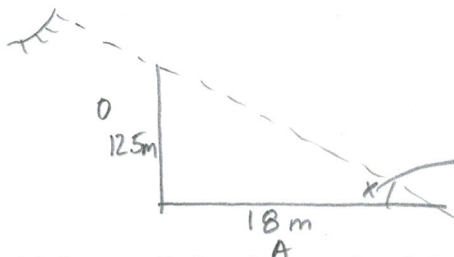
32. From the top of a 120 foot tower, an air traffic controller observes an airplane on the runway at an angle of depression of 19° . How far from the base of the tower is the airplane?



$$\tan 19 = \frac{120}{x}$$

$$x = \frac{120}{\tan 19} = 348.51 \text{ ft}$$

33. Find the angle of elevation of the sun when a 12.5 meter tall telephone pole casts an 18 meter long shadow.

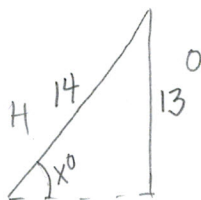


$$\tan x = \frac{12.5}{18}$$

$$x = \tan^{-1}\left(\frac{12.5}{18}\right)$$

$$x = 34.78^\circ$$

34. A 14 foot ladder is used to scale a 13 foot wall. At what angle of elevation must the ladder be situated in order to reach the top of the wall?

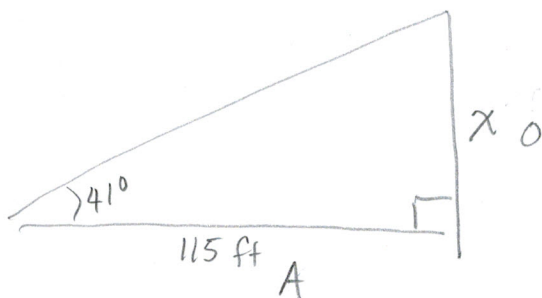


$$\sin x = \frac{13}{14}$$

$$x = \sin^{-1}\left(\frac{13}{14}\right)$$

$$x = 68.21^\circ$$

35. The angle of elevation to the top of a building is 41° when measured at a distance of 115 feet from the base of the building. How tall is the building?



$$\tan 41 = \frac{x}{115}$$

$$x = 115 \tan 41$$

$$x = 99.97 \text{ ft.}$$