

TRIG

Chapter 7 Review

1. $\sin \theta = \frac{2}{3}$ and lies in the second quadrant, $90^\circ < \theta < 180^\circ$.

a. Sketch θ & θ_{ref} b. Find $\cos \theta$, $\tan \theta$, $\sec \theta$, $\csc \theta$, $\cot \theta$.

c. Find θ and θ_{ref}

2. For each angle below: a. Write its degree or radian equivalent

b. Tell what its reference angle is.

i. 40° ii. 290° iii. 520° c. Give the other ~~angle~~ angle between 0° & 360° that has an equivalent sine value

iv. $\pi/3$ v. $7\pi/10$ vi. 5rad and an equivalent cosine value.

3. Solve each equation and give the 2 correct solutions over the domain $0 \leq \theta < 360^\circ$.

a. $\theta = \sin^{-1}(0.5)$ b. $\cos \theta = \frac{1}{5}$ c. $\tan \theta = \frac{1}{\sqrt{3}}$

d. $\sin \theta = -\frac{1}{4}$ e. $4 + 3\cos \theta = 1$ f. $(\sin \theta)^2 = \frac{1}{2}$
* 4 answers

4. If $\sin \theta = \frac{y}{r}$ & $\cos \theta = \frac{x}{r}$, prove that for any θ ,
 $(\sin \theta)^2 + (\cos \theta)^2 = 1$.

5. NO CALCULATORS! Evaluate each expression.

a. $2 \cdot \sin 30^\circ \cdot \cos 30^\circ$ b. $\sin 45^\circ + \sin 60^\circ$ c. $(\tan \frac{5\pi}{6})^2$

d. $\cos 120^\circ \cdot \sin 30^\circ + \cos 30^\circ \cdot \sin 120^\circ$ e. $(\cos \frac{\pi}{3})^2 - (\sin \frac{\pi}{6})^2$

6. Determine if each is true or false. If false, show why.

a. $\sin 90^\circ - \sin 60^\circ = \sin 30^\circ$ b. $\cos \theta = \cos(-\theta)$

c. $\sec 45^\circ = \sqrt{2}$

d. $3 \cdot \cos(\pi/3) = \cos \pi$

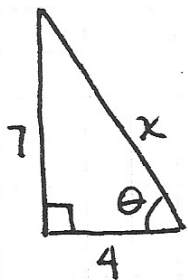
e. $\sin \theta = \sin(180 - \theta)$

f. $\cos \frac{3\pi}{4} = 135^\circ$

7. $\tan \theta = -\frac{1}{4}$ and $270^\circ < \theta < 360^\circ$.

- Sketch θ in the correct quadrant.
- Find θ and θ_{ref}
- Find $\sin \theta$ & $\cos \theta$.
- T or F $\tan(\theta - 180^\circ) = -\frac{1}{4}$ also.

8. Find x and θ .



9. Review - Solve each equation.

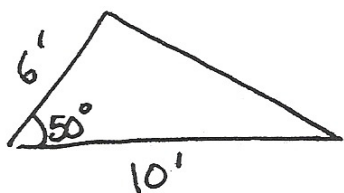
- $7(x-4) = 4x - 3(2-x)$
- $\frac{1}{5} \cdot 3^x = 18$
- $\log_4 x = -2$
- $x^2 - 7x + 8 = 4 - 2x$
- $x^3 - 7x + 6 = 0$
- $0.4e^{3x} = 100$

10. A ferris wheel has a diameter of 100 ft.

- Find the circumference of the wheel.
- Using the proportion, $\frac{C}{360^\circ} = \frac{\text{arclength}}{\theta}$, find the distance

you would travel if the Ferris wheel turned 60° .
Show that this distance (arclength) is simply the radius $\times$ θ (in radians).

11. Find the area of this non-right triangle by using SOHCAHTOA to find the height.



12. Use your calculator to describe how the graph of $y = \sin \theta$ change in each of the following. Sketch each

- $y = -\sin \theta$
- $y = 2 \sin \theta$
- $y = \sin(2\theta)$
- $y = \sin(\theta + 90^\circ)$