

survey says your favorites are...

album	film
ac/dc - black ice	avatar
coldplay - mylo xyloto	avengers
decyfer down - crush	batman: the dark knight rises
eminem - recovery	battleship
every avenue - bad habits	breaking dawn
foo fighters - wasting light	harry potter and the deathly hallows pt. 2
fun - aim and ignite	hunger games
fun - some nights	inception
gorillaz - plastic beach	mission impossible: ghost protocol
imagine dragons	october baby
incredibad - lonely island	promethius
kimbra - cameo lover	scott pilgrim vs. the world
lecræe - after the music stops	snow white and the huntsman
lil wayne - the carter IV	super 8
linkin park - living things	the devil's carnival
mumford and sons - babel	the expendables 2
mumford and sons - sigh no more	the perks of being a wallflower
one republic - waking up	the vow
one, true, god	wreck it ralph
owl city - all things are beautiful	x-men: first class
panic at the disco - pretty odd	
pentatonix - ptx vol. 1	
pink - the truth about love	
psy - gangnam style	
taylor swift - enchanted	
taylor swift - speak now	
the fray - scars and stories	
wale - ambition	
weird al - alpcalypse	

brewer's picks:

album: björk - *biophilia* (2011)
(close 2nd: yip deceiver - self-titled ep)

film: *moonrise kingdom* (2012)
(close 2nd: *avengers*)

Evaluate the trigonometric expressions. Give exact answers. You do not have to rationalize. Draw a picture if it helps.

1. $\sin 225^\circ =$



4. $\cos 720^\circ =$



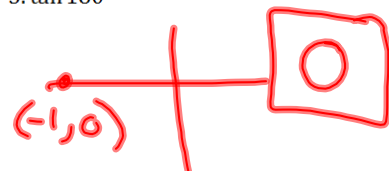
2. $\sec(-240^\circ) =$



5. $\sec 135^\circ =$



3. $\tan 180^\circ =$



6. $\cot 330^\circ =$



7. A *reference angle* α is the acute angle between the terminal side of the given angle θ and X-axis.

8. Two angles are considered to be *coterminal* if they differ by integer multiples of 2π or 360° .

9. The function value of an angle is equal to the *cofunction* value of its complement.

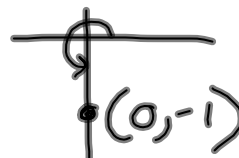
(from 2009 Test #1 on web site)

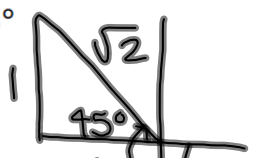
9. A wheel with a 24 inch diameter rotates at a rate of 5 revolutions per minute. What is the linear speed of a point on its rim in feet per second?

$$r = 12 \text{ in} ; \omega = \frac{5 \text{ rev}}{\text{min}} ; v = ? \frac{\text{ft}}{\text{s}}$$

$$v = r\omega = \frac{12 \text{ in}}{1} \cdot \frac{5 \text{ rev}}{\text{min}} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ min}}{60 \text{ s}} \cdot \frac{2\pi}{1 \text{ rev}} = \frac{\pi \text{ ft}}{6 \text{ s}}$$

2. Find the exact value of the following.

a. $\sin 270^\circ$  -1

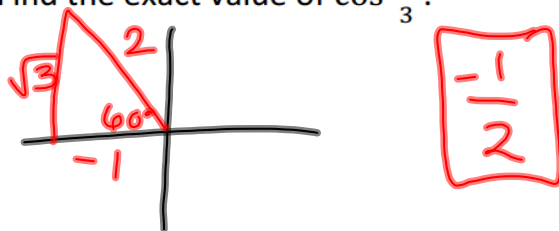
b. $\cos -225^\circ$  $-\frac{1}{\sqrt{2}}$

c. $\sec 315^\circ$  $\sqrt{2}$

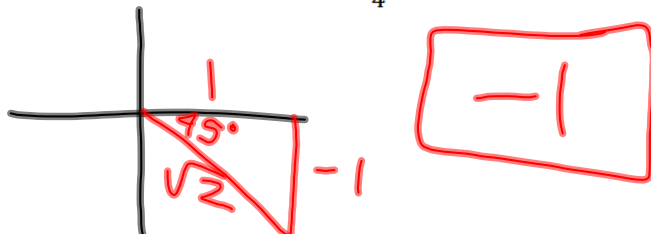
d. $\csc 420^\circ$  $\frac{2}{\sqrt{3}}$

e. $\cot -135^\circ$  1

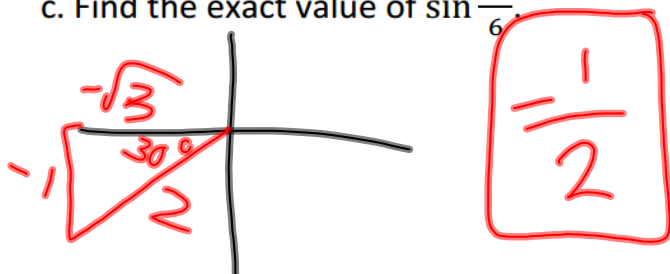
3. a. Find the exact value of $\cos \frac{2\pi}{3}$.



b. Find the exact value of $\tan \frac{7\pi}{4}$.



c. Find the exact value of $\sin \frac{7\pi}{6}$.



(From Test #1 Practice Problems, i.e. 2012 Fall Test #1)

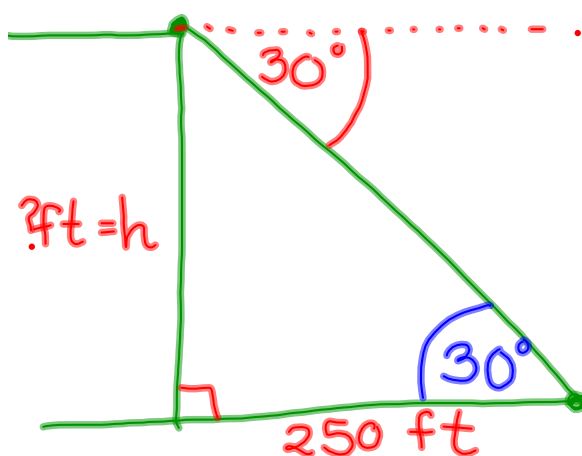
9. A child rides his tricycle at a rate of 20 miles per hour. If the diameter of the front wheel is 8 inches, find the angular speed of the wheel in revolutions per minute. Give an exact answer, in terms of π if necessary.

$$v = \frac{20 \text{ mi}}{h} ; r = 4 \text{ in} ; \omega = ? \frac{\text{rev}}{\text{min}} \quad \frac{v}{r} = \cancel{\omega}$$

$$\omega = \frac{v}{r} \cdot \frac{1}{r} = \frac{20 \text{ mi}}{h} \cdot \frac{1}{4 \text{ in}} \cdot \frac{1 \text{ h}}{60 \text{ min}} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} \cdot \frac{1 \text{ rev}}{2\pi}$$

$$= \frac{2640}{\pi} \text{ rev/min}$$

8. The angle of depression from the top of a cliff to an object on the ground is 30° . If the object is 250 feet from the base of the cliff, how tall is the cliff? Give an exact answer in feet.



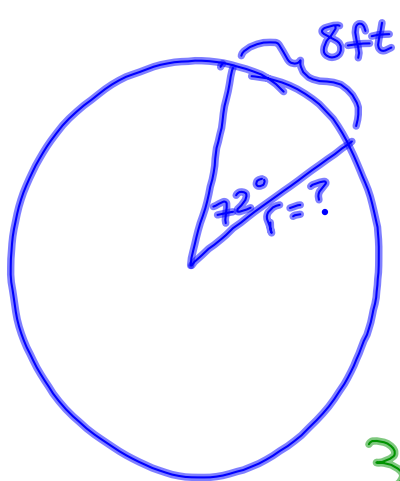
$$\tan 30^\circ = \frac{h}{250}$$

$$h = 250 \tan 30^\circ = 250 \cdot \frac{1}{\sqrt{3}}$$

$$= \frac{250 \text{ ft}}{\sqrt{3}}$$



10. Find the exact measure in inches of the radius of a circle with a central angle of 72° that subtends an arc of length 8 feet.



$$\theta = 72^\circ; s = 8 \text{ ft}; r = ? \text{ in}$$

$$\frac{s}{\theta} = \frac{r}{1}$$

$$r = \frac{8 \text{ ft}}{72^\circ} \cdot \frac{30}{180} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = \frac{240}{\pi} \text{ in}$$

7. Write the following in terms of $\sin 38^\circ$ and $\cos 38^\circ$.

a. $\csc 322^\circ = -\csc 38^\circ =$

322° & 38° have same ref. \angle

$$\frac{-1}{\sin 38^\circ}$$

b. $\tan 52^\circ = \cot 38^\circ =$

52° & 38° are complements

$$\frac{\cos 38^\circ}{\sin 38^\circ}$$

