Groups:

- *Check your homework with each other.*
- *Try to come to consensus on the answers.*
- *When you do have me check.*
- *When you have all right....*

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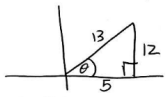
Name: Key

Period :

Algebra 2 Homework 7-6

1. On a unit circle, $\sin(\theta)=\frac{12}{13}$ and θ is acute. What is the exact values of $\cos(\theta)$?

a. Find your answer by drawing the triangle in the correct quadrant in standard position.



$\cos(\theta)=\frac{5}{13}$

b. Find your answer using the Pythagorean Identity.

$\sin^2(\theta)+\cos^2(\theta)=1$

$\left(\frac{12}{13}\right)^2+\cos^2(\theta)=1$

$\frac{144}{169}+\cos^2(\theta)=\frac{169}{169}$

$\sqrt{\cos^2(\theta)}=\sqrt{\frac{25}{169}}$

$\cos(\theta)=\pm\frac{5}{13}$

QI $\cos\theta(+)$

so $+5/13$

2. Using the identity $\sin^2(\theta)+\cos^2(\theta)=1$, find the value of $\tan(\theta)$, to the nearest hundredth, if $\sin(\theta)$ is 0.7 and θ is in Quadrant II.

$\sin^2(\theta)+\cos^2(\theta)=1$

$(.7)^2+\cos^2(\theta)=1$

$.49+\cos^2(\theta)=1$

$\sqrt{\cos^2(\theta)}=\pm.51$

$\cos(\theta)=\pm.714$

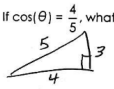
QII $\cos(\theta)$ (−)

so $\cos(\theta)=-.714$

$\tan(\theta)=\frac{\sin(\theta)}{\cos(\theta)}=\frac{.7}{-.714}$

$\tan(\theta)=-.98$

3. a. If $\cos(\theta)=\frac{4}{5}$, what are **two** possible values for $\sin(\theta)$?



$\sin(\theta)=\pm 3/5$

b. Why are there two possible values for $\sin(\theta)$?

depends on what quadrant θ is in

c. Find $m<\theta$ if $270°<\theta<360°$ to nearest tenth.

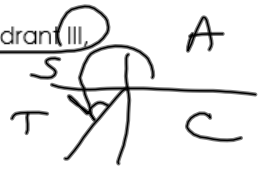
$\alpha=\sin^{-1}(3/5)=36.9°$

QIII $\theta=\alpha+180°=36.9°+180°=216.9°$

$\sin^2\theta + \cos^2\theta = 1$

4. If $\sin^2(32°)+\cos^2(M) = 1$, then M equals
   a. 32° b. 58° c. 68° d. 72°

5. Using the Pythagorean Identity, given $\cos(\theta) = -0.5$, and angle θ is in quadrant III, find $\sin(\theta)$ and $\tan(\theta)$ to the nearest tenth.



$\sin^2\theta + \cos^2\theta = 1$

$\sin^2\theta + (-.5)^2 = 1$

$\sin^2\theta = 1 - .25 = .75$

$\sqrt{\sin^2\theta} = \sqrt{.75}$

$\sin\theta = \pm .9$

III → sin −, $\sin\theta = -.9$

$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{-.9}{-.5} = 1.8$

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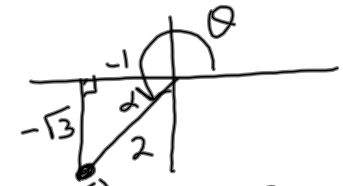
6. Draw an angle in standard position given $\cos(\theta) = -1/2$, and angle θ is in quadrant III. Use the triangle to find $\sin(\theta)$ and $\tan(\theta)$ to the nearest tenth.

$= \frac{A}{H}$



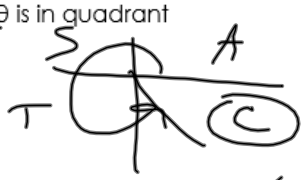
$\sin\theta = \frac{O}{H} = \frac{-\sqrt{3}}{2} \approx -.9$

$\tan\theta = \frac{-\sqrt{3}}{-1} = \sqrt{3} \approx 1.7$

$(-1, -\sqrt{3})$ $(-1)^2 + b^2 = 2^2$

$b^2 = 4 - 1 = 3 \rightarrow b = \pm\sqrt{3}$

7. Using the Pythagorean Identity, given $\sin(\theta) = -7/10$, and angle θ is in quadrant IV, find the exact values of $\cos(\theta)$ and $\tan(\theta)$.



$\left(\frac{-7}{10}\right)^2 + \cos^2\theta = 1$

$\cos^2\theta = 1 - \frac{49}{100} = \frac{100}{100} - \frac{49}{100}$

$\sqrt{\cos^2\theta} = \sqrt{\frac{51}{100}}$

$\cos\theta = \pm\frac{\sqrt{51}}{10} \rightarrow \cos\theta = \frac{\sqrt{51}}{10}$

$\tan\theta = \frac{-7}{10} \cdot \frac{10}{\sqrt{51}}$

$\tan\theta = \frac{-7}{\sqrt{51}} = \frac{-7\sqrt{51}}{51}$

8. If $\sin^2(\theta)+\cos^2(\pi) = 1$, then θ equals
   a. −θ b. π/3 c. π d. π/2

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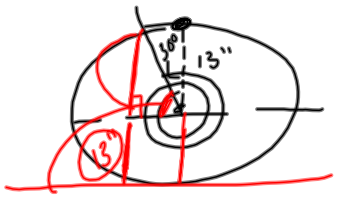
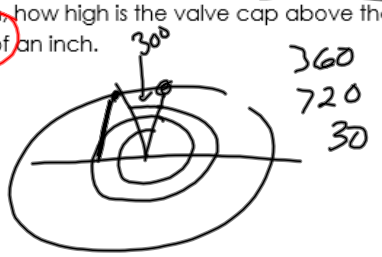
Application Word Problems: $r = 13''$

1. A bicycle wheel with a radius of 13" has a valve cap positioned at the highest point of the wheel. If the wheel is spun 750° in one direction, how high is the valve cap above the ground? Round your answer to the nearest tenth of an inch.





360
720
30

60°

$\frac{\sin 60^\circ}{1} = \frac{x}{13}$

$x = 13 \sin 60^\circ = 11.258$

$+13$

24.258

$\approx 24.3''$

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