Name:_____ Date:_____

Math 10/11 Honors Section 4.3 Solving Angles in All Four Quadrants

1. If $\sin\theta$ is equal to a negative ratio, then which quadrants will the angle be? What if the ratio is positive, which quadrant is it in?

2. If $\cos\theta$ is equal to a negative ratio, then which quadrants will the angle be? What if the ratio is positive, which quadrant is it in?

3. If $\tan\theta$ is equal to a negative ratio, then which quadrants will the angle be? What if the ratio is positive, which quadrant is it in?

4. If θ is in quadrant 3, then which trig ratio will be negative? $\sin\theta$, $\cos\theta$, or $\tan\theta$?

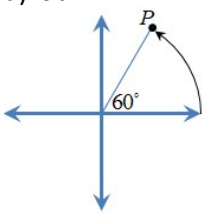
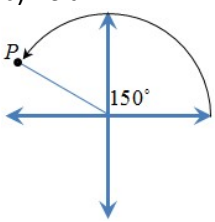
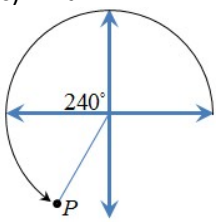
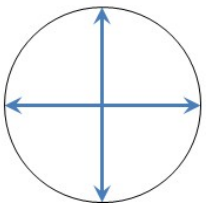
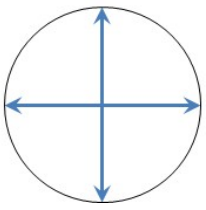
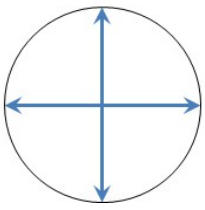
5. If θ is in quadrant 4, then which trig ratio will be negative? $\sin\theta$, $\cos\theta$, or $\tan\theta$?

6. Solve for θ, with $0 \le \theta \le 360°$. [REMEMBER: There are TWO answers!]

a) $\sin\theta = 0.8$	b) $\cos\theta = 0.85$	c) $\tan\theta = 0.3$
a) $\sin\theta = -0.9$	b) $\cos\theta = 0.125$	c) $\tan\theta = 0.25$

g) $3\sin\theta+5=0$	h) $\tan^2\theta-5=0$	i) $4\cos^2\theta-8=1$
j) $(\cos\theta+1)(3\sin\theta-2)=0$	k) $3\sin\theta=4\cos\theta$	L) $\sin\theta=\cos\theta$

7. A point ``P`` created by the endpoint of a terminal arm is on the circumference of an unit circle of radius 1. Given the angle in standard position, find the coordinates of point `P`.

a) 60° 	b) 150° 	c) 240° 
d) $225°$ 	e) $300°$ 	f) $315°$ 

8. Given each trig ratio, find the specified trig ratio without using a calculator:

a) $\sin\theta=0.5$ $\cos\theta=$ $\tan\theta=$	b) $\cos\theta=\dfrac{-\sqrt{2}}{2}$ $\sin\theta=$ $\tan\theta=$	c) $\tan\theta=-\sqrt{3}$ $\cos\theta=$ $\sin\theta=$

d) $\sin\theta = 1/\sqrt{2}$ $\cos\theta =$ $\tan\theta =$	e) $\cos\theta = \frac{-\sqrt{3}}{2}$ $\sin\theta =$ $\tan\theta =$	f) $\tan\theta = \frac{1}{\sqrt{3}}$ $\cos\theta =$ $\sin\theta =$
g) $\sin\theta = -1$	h) $\cos\theta = -0.5$	i) $\tan\theta = -1$

9. If the point P(3,-5) is on the terminal arm of an angle in standard position. What is the value of $\sin\theta \times \cos\theta$? Note: This point is not on the circumference of an unit circle.

10. Determine the following using exact value. No calculators:

a) $\cos\frac{5\pi}{4}$	b) $\tan\frac{3\pi}{2}$	c) $\sin\frac{7\pi}{6}$
d) $\tan\frac{-3\pi}{4}$	e) $\cos\frac{11\pi}{6}$	f) $\sin\frac{8\pi}{3}$
g) $\tan 3\pi$	h) $\sin\frac{-5\pi}{3}$	i) $\cos\frac{3\pi}{3}$

11. The point $(-3,5)$ is on the terminal arm of angle θ in standard position. Find the angle in radians to one decimal place .

12. A wheel with a radius of 1.5m is rotating at a angular velocity of 5.5radians per second. What is the speed of the wheel in m/s?

13. When an object is moving in a circle, its angular velocity is the angle per unit time through which it rotates about the center. A car tire has diameter 64cm. Determine its angular velocity, in radians per second, when the car is travelling at 100km/h.

14. Write an expression for the angular velocity, in radians per second, for a car tire with diameter "d" centimeters when the car is travelling at "x" kilometers per hour.

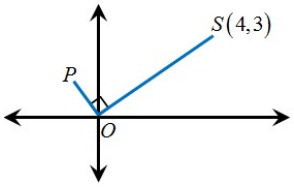
15. The angle θ is in the first quadrant and $\cos\theta = \frac{1}{\sqrt{3}}$. Draw a diagram to show the angle in standard position and a point "P" on its terminal arm. Determine the possible coordinates for "P"

16. If $\sin\theta = -\frac{3}{\sqrt{11}}$, draw a diagram to show the angle(s) in standard position and a point "P" on its terminal arm. Determine the possible coordinates for "P" if it was on an unit circle.

17. If $\tan\theta = -\frac{3}{\sqrt{7}}$, angle θ is in standard position, and its terminal arm is in quadrant II. What is the exact value of $\cos\theta$?

18. Point P(3,-5) is on the terminal arm of an angle in standard position. What is the value of $\sin\theta \times \cos\theta$?

19. In the figure, if $\overline{PO}$ is one unit long, find the exact coordinates of point "P".



20. What is the value of $\sin\theta \times \tan\theta$ if point P(1.957, -0.412) is on a circle with a radius of 2units?

21. Evaluate: $\sin\left(\frac{\pi}{12}\right) - \cos\left(\frac{\pi}{6}\right) + \tan\left(\frac{\pi}{4}\right) - \sin\left(\frac{\pi}{3}\right) - \cos\left(\frac{5\pi}{12}\right)$

22. Find the exact value of $\sum_{k=1^\circ}^{360^\circ} \sin k$

23. If $\cos\theta = {}^{2a}\!/_{3}$, then what is the value of $\tan\theta$ in terms "*a*"?

24. If $\cos x = 0$ and $\cos(x+k) = 0.5$, what is the smallest possible positive value of "k"?

25. If $K\cos\theta = 3$ and $K\sin\theta = 2$, where K>0, find the value of "R"

26. If $A+B=180^\circ$, which of the following statements must be true?

I) $\sin A=\sin B$, ii) $\cos A=\cos B$ iii) $\tan A=-\tan B$

27. If $0\le\theta\le180^\circ$ and $\sin\theta\ge\cos\theta$, then what is the range of values for θ?

28. Which of the following is equal to $\cos\left(270^\circ-\theta\right)$? (No calculators)

I) $-\cos\theta$ ii) $\cos\theta$ iii) $-\sin\theta$ iv) $\sin\theta$

29. Determine the exact value of $\sin\theta$ in terms of "m" and "n" if $\cos\theta=\frac{m}{n}$, where θ is in quadrant 4.