Math 36

Test 1 Pre-Test

Name _____

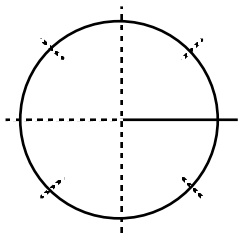
Rationalize all denominators, as necessary.

Rationalize the denominator and simplify the expression.

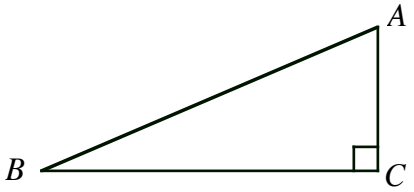
1. $\dfrac{-6}{3-\sqrt{6}}$

What degree measure represents the given portion of a circle? Draw a central angle that has that same number of degrees.

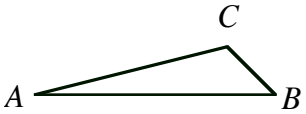
2. $\frac{7}{9}$ of a circle



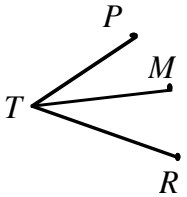
3. In ΔABC, $m\angle B = 22°\ 18'\ 41''$. Find $m\angle A$.



4. In ΔABC, $m\angle A = 17°\ 26'\ 38''$ and $m\angle B = 44°\ 31'\ 55''$. Find $m\angle C$.



5. At right, $\overline{TM}$ bisects $\angle PTR$.

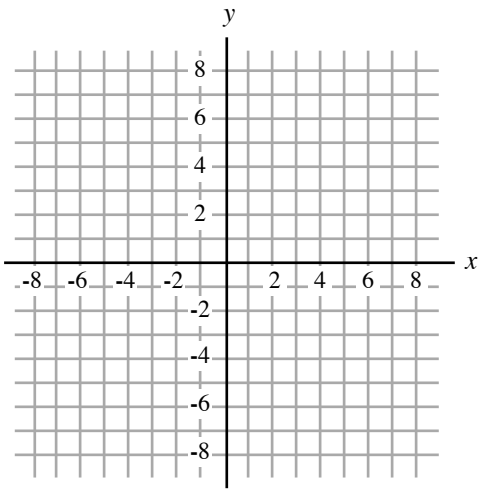


a) If $m\angle PTM = 28°\ 43'\ 52''$, find $m\angle PTR$.

b) If $m\angle PTR = 63°\ 31'\ 18''$, find $m\angle PTM$.

6. Consider a circle centered at the origin that passes through $(-4, 2\sqrt{5})$.

a) Find the radius of the circle



b) Draw its graph.

c) What is the equation of the circle?

Verify that the given point is on the unit circle.

7. $\left(-\frac{5\sqrt{3}}{9}, \frac{\sqrt{6}}{9}\right)$

Use the identity $\sin\theta = \pm\sqrt{1 - \cos^2\theta}$ to find $\sin\theta$.

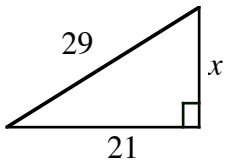
8. $\cos\theta = -\frac{\sqrt{5}}{3}$ and θ terminates in QIII..

9. The radius of a circle is 4 inches, and the measure of Arc_{AB} is $\frac{20\pi}{3}$. Determine the measure of the central angle that subtends Arc_{AB}.

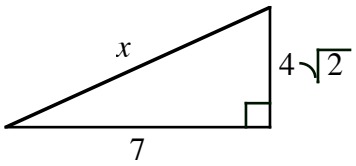
10. The radius of a circle is 6 inches, and the measure of a central angle, $m\angle AOB$ is 80°. Determine the length of the arc it subtends.

Find the value of x in the given triangle and simplify completely.

11.

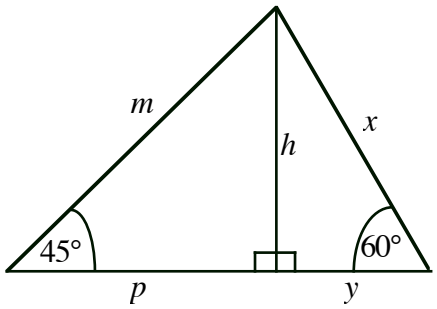


12.



Find the values of h, m, p, x, and y, which represent the lengths of the sides of these triangles. Simplify completely.

13.

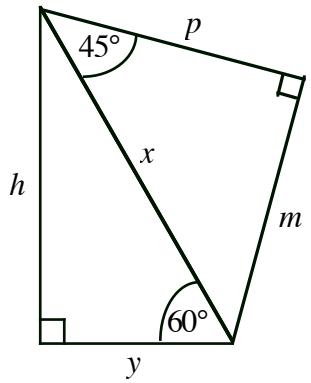


a) $x = 4$

b) $h = 9$

c) $m = 12$

14.



a) $y = 5$

b) $x = 6\sqrt{3}$

c) $h = 9\sqrt{2}$

15. Based on the given information, in which quadrant does θ terminate?

a) $\sec\theta < 0$ and $\sin\theta > 0$

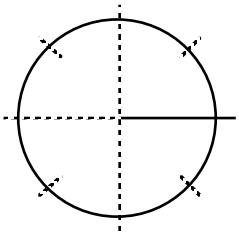
b) $\tan\theta > 0$ and $\cos\theta < 0$

c) $\csc\theta > 0$ and $\tan\theta > 0$

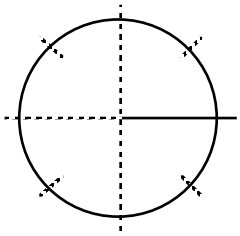
d) $\cot\theta < 0$ and $\cos\theta < 0$

For each given angle measure, (i) locate it in a circle using standard position, and (ii) identify an angle **between 0° and 360°** that is coterminal with it.

16. $\theta = -240°$

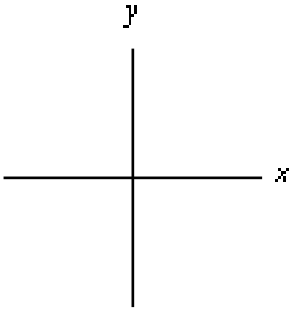


17. $\theta = 930°$



Locate the given point in the *x*-*y*-plane, and draw a positive angle θ whose terminal side contains the point. Then, find the values of the six trig functions of θ and simplify.

18. $(3, -\sqrt{7})$



$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

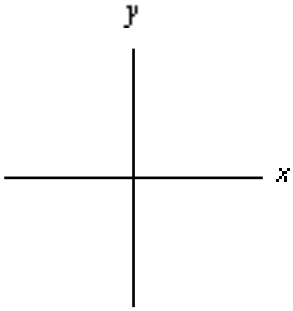
What is *r*?

$\cot\theta =$

$\sec\theta =$

$\csc\theta =$

19. $(0, 2)$



$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

What is *r*?

$\cot\theta =$

$\sec\theta =$

$\csc\theta =$

Find and simplify the requested trig values based on the information given. Rationalize the denominator, if necessary.

20. If θ terminates in Quadrant IV and $\cot\theta = -\frac{3}{4}$, find

$\sin\theta =$

$\tan\theta =$

$\sec\theta =$

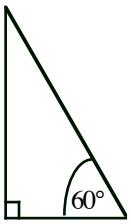
21. If θ terminates in Quadrant II and $\csc\theta = \frac{3}{\sqrt{5}}$, find

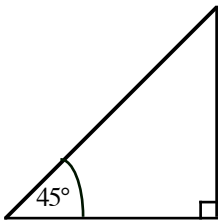
$\sin\theta =$

$\cos\theta =$

$\tan\theta =$

22. Use the given triangles and mark them however you wish to assist you in finding the following trig values. (Simplify and rationalize the denominator, if necessary.)





sin 30° =	sin 60° =	sin 45° =
cos 30° =	cos 60° =	cos 45° =
tan 30° =	tan 60° =	tan 45° =
cot 30° =	cot 60° =	cot 45° =
sec 30° =	sec 60° =	sec 45° =
csc 30° =	csc 60° =	csc 45° =

Evaluate each. Simplify; rationalize the denominator, if necessary.

23. $2\sqrt{3}\ \sin 60°$

24. $\sqrt{\cot 45°}$

25. $\sqrt{\sec 60°}$

26. $(\tan 30°)^2$

27. $(\csc 45°)^2$

28. $\tan 60° \cdot \cos 30°$

Write each in terms of sine and cosine only. and then simplify completely.

29. $\sin\theta \cdot \cot\theta + \cos\theta$

30. $\sec\theta - \tan\theta \cdot \sin\theta$

Demonstrate that the equation is an identity by transforming the left side (only) to be equivalent to the right side.

31. $\dfrac{\tan\theta}{\sin\theta\cos\theta} = \sec^2\theta$

32. $\csc\theta\tan\theta - \cos\theta = \dfrac{\sin^2\theta}{\cos\theta}$