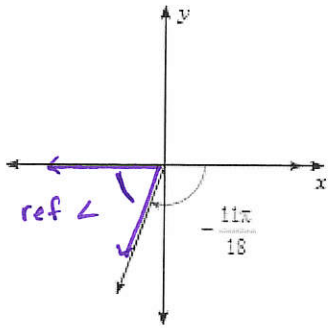
Honors Math II
Unit 9 day 3

Name Key
Period_____ Date_____

Find the reference angle.

1.



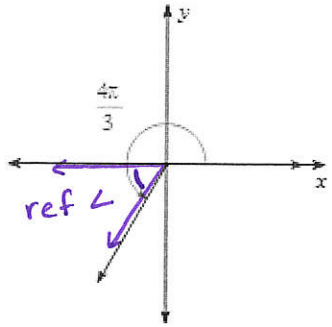
$180° = \pi$

$\pi - \frac{11\pi}{18}$

$\frac{18\pi}{18} - \frac{11\pi}{18} =$

$\frac{7\pi}{18}$

2.



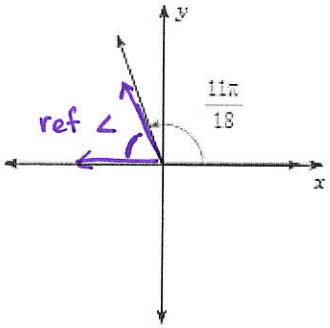
$180° = \pi$

$\frac{4\pi}{3} - \pi$

$\frac{4\pi}{3} - \frac{3\pi}{3} =$

$\frac{\pi}{3}$

3.

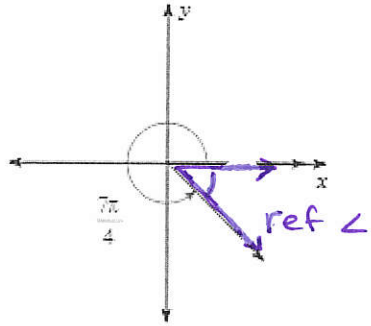


$\pi - \frac{11\pi}{18}$

$\frac{18\pi}{18} - \frac{11\pi}{18}$

$\frac{7\pi}{18}$

4.



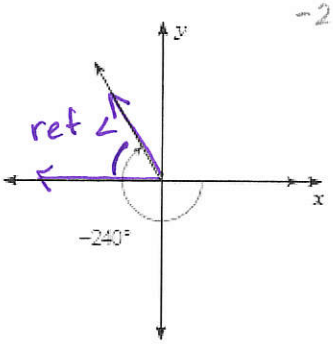
$2\pi = 360°$

$2\pi - \frac{7\pi}{4} =$

$\frac{8\pi}{4} - \frac{7\pi}{4} =$

$\frac{\pi}{4}$

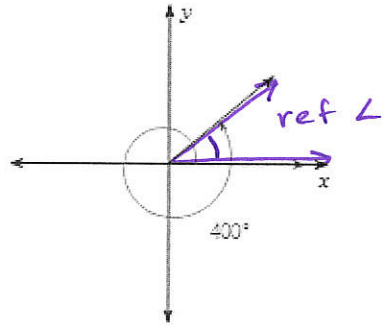
5.



$-240° + 180°$

$60°$

6.

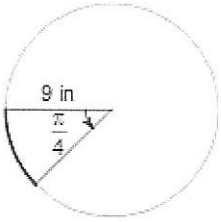


$400° - 360°$

$40°$

Find the length of each arc.

7.



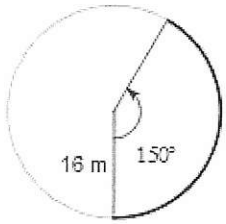
$s = r\theta$

$s = 9(\pi/4)$

$s = 9\pi/4$ in

$s \approx 7.07$

8.



$s = r\theta$

$150°(\pi/180°) = \frac{5\pi}{6}$

$s = 16(5\pi/6) = \frac{40\pi}{3}$

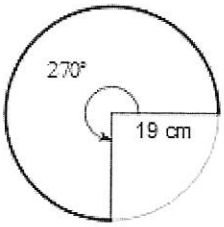
$s \approx 41.89$ m

or

$s = \frac{150°}{360°}(32\pi) \approx 41.89$

Find the length of each arc.

9.



$S = r\theta$ $\left(\frac{\pi}{180°}\right)(270°)$

$S = 19\left(3\pi/2\right)$

$S = \frac{57\pi}{2}$

$S \approx 89.54$ cm

10.

$r = 5\ km, \theta = \frac{\pi}{3}$

$S = (5)(\pi/3)$

$S = \frac{5\pi}{3}$

$S \approx 5.24$ Km

11.

$r = 11\ m, \theta = 75°$

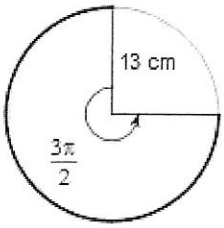
$(75°)(\pi/180°) = 5\pi/12$

$S = (11)(5\pi/12)$

$S = \frac{55\pi}{12}$

$S \approx 14.4$ m

12.



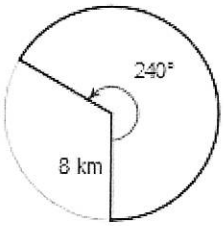
$S = 13\left(3\pi/2\right)$

$S = 39\pi/2$

$S \approx 61.26$ cm

Find the area of each sector.

13.



$A = \frac{1}{2}r^2\theta$

$A = \frac{1}{2}(8)^2(4\pi/3)$

$A = \frac{128\pi}{3}$

$240°\left(\pi/180°\right) = 4\pi/3$

$A \approx 134.04\ km^2$

14.

$r = 12\ m, \theta = \frac{7\pi}{4}$

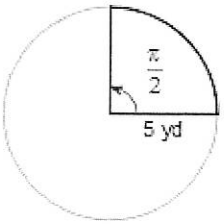
$A = \frac{1}{2}r^2\theta$

$A = \frac{1}{2}(12)^2(7\pi/4)$

$A = 126\pi$

$A \approx 395.84\ m^2$

15.

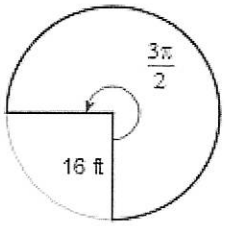


$A = \frac{1}{2}(5)^2(\pi/2)$

$A = \frac{25\pi}{4}$

$A \approx 19.63\ yd^2$

16.



$A = \frac{1}{2}(16)^2\left(\frac{3\pi}{2}\right)$

$A = 192\pi$

$A \approx 603.2\ ft^2$

17.

$r = 10\ ft, \theta = 210°$

$\theta = 210°\left(\pi/180°\right)$

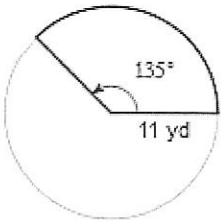
$\theta = 7\pi/6$

$A = \frac{1}{2}(10)^2(7\pi/6)$

$A = \frac{175\pi}{3}$

$A \approx 183.3\ mi^2$

18.



$A = \frac{1}{2}(11)^2\left(\frac{3\pi}{4}\right)$

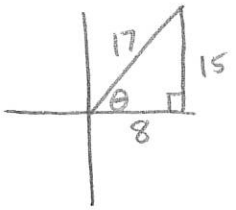
$A = \frac{363\pi}{8}$

$A \approx 142.5\ yd^2$

$135°\left(\pi/180°\right) = \frac{3\pi}{4}$

Use the given point on the terminal side of an angle θ in standard position to evaluate the six trigonometric functions of θ .

19. $(8, 15)$



$\sin\theta = \frac{15}{17}$

$\cos\theta = 8/17$

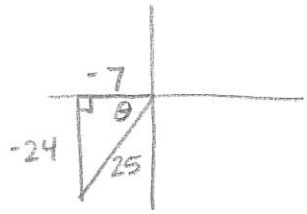
$\tan\theta = 15/8$

$\csc\theta = 17/15$

$\sec\theta = 17/8$

$\cot\theta = 8/15$

20. $(-7, -24)$



$\sin\theta = \frac{-24}{25}$

$\cos\theta = \frac{-7}{25}$

$\tan\theta = \frac{24}{7}$

$\csc\theta = \frac{-25}{24}$

$\sec\theta = \frac{-25}{7}$

$\cot\theta = 7/24$

Find the value of each. Round your answer to the nearest ten-thousandths.

21. $\csc 61°$

$\frac{1}{\sin 61°} \approx 1.1434$

22. $\sin 13°$ $\approx .2250$

23. $\cos 22°$ $\approx .9272$

24. $\cot 21°$

$\frac{1}{\tan 21°} \approx 2.6051$

25. $\tan\frac{7\pi}{36}$ Change to radian mode

$\approx .7002$

26. $\tan\frac{5\pi}{18}$

≈ 1.1918

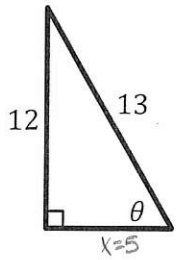
27. $\cot\frac{5\pi}{36}$

$\frac{1}{\tan 5\pi/36} \approx 2.1445$

28. $\cos\frac{5\pi}{18}$ $\approx .6428$

Find the value of the trig function indicated.

29. $\tan\theta =$

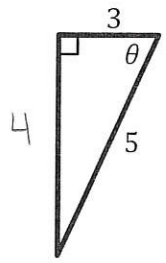


$\tan\theta = \frac{12}{5}$

$x^2 + 12^2 = 13^2$

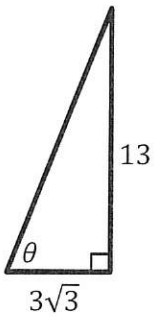
$x = 5$

30. $\cot\theta =$



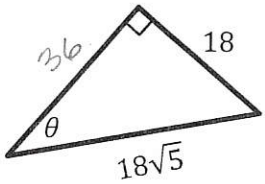
$\cot\theta = \frac{3}{4}$

31. $\cot\theta =$



$\cot\theta = \frac{3\sqrt{3}}{13}$

32. $\tan\theta =$



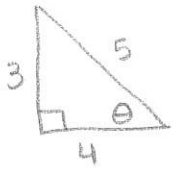
$\tan\theta = \frac{18}{36}$

$\tan\theta = \frac{1}{2}$

$x^2 + 18^2 = (18\sqrt{5})^2$

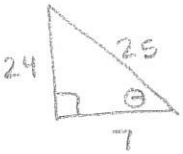
$x = 36$

33. Find $\cos\theta$ *if* $\sin\theta = \frac{3}{5}$ opp / hyp



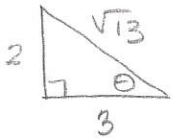
$\cos\theta = \frac{4}{5}$

34. Find $\sec\theta$ *if* $\cot\theta = \frac{7}{24}$ adj / opp



$\sec\theta = \frac{25}{7}$

35. Find $\cos\theta$ *if* $\csc\theta = \frac{\sqrt{13}}{2}$ hyp / opp



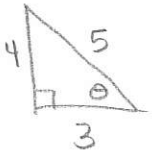
$\cos\theta = \frac{3}{\sqrt{13}}$

$2^2 + x^2 = (\sqrt{13})^2$

$x = 3$

$\cos\theta = \frac{3\sqrt{13}}{13}$

36. Find $\sec\theta$ *if* $\sin\theta = \frac{4}{5}$



$\sec\theta = \frac{5}{3}$