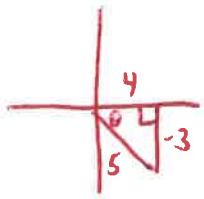
Pre-Calc/ Trig III Chapter 4 **REVIEW** Name_____
Date_____Block_____

Find all six trig functions of an angle whose terminal side contains the given point.

1. (4, -3)



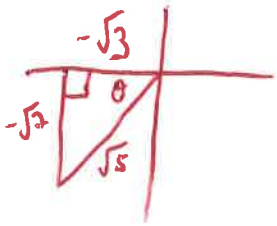
sin θ = [redacted] $\frac{-3}{5}$ csc θ = [redacted] $\frac{-5}{3}$

cos θ = [redacted] $\frac{4}{5}$ sec θ = [redacted] $\frac{5}{4}$

tan θ = $\frac{-3}{4}$ cot θ = $\frac{-4}{3}$

2. $(-\sqrt{3},-\sqrt{2})$

$3^2+2^2=r^2$
$5=r^2$



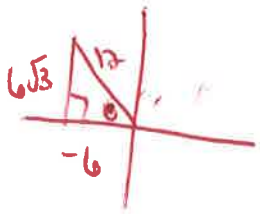
$\frac{-\sqrt{2}}{\sqrt{5}}$ sin θ = $\frac{-\sqrt{10}}{5}$ csc θ = $\frac{-\sqrt{10}}{2}$ $\frac{\sqrt{5}}{-\sqrt{2}}$

$\frac{-\sqrt{3}}{\sqrt{5}}$ cos θ = $\frac{-\sqrt{15}}{5}$ sec θ = $\frac{-\sqrt{15}}{3}$ $\frac{\sqrt{5}}{-\sqrt{3}}$

$\frac{-\sqrt{2}}{-\sqrt{3}}$ tan θ = $\frac{\sqrt{6}}{3}$ cot θ = $\frac{\sqrt{6}}{2}$ $\frac{-\sqrt{3}}{-\sqrt{2}}$

3. $(-6, 6\sqrt{3})$

$(6\sqrt{3})^2+(-6)^2=r^2$
$108+36=r^2$
$144=r^2$
$12=r$



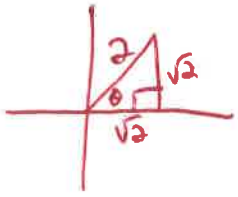
sin θ = $\frac{\sqrt{3}}{2}$ csc θ = $\frac{2\sqrt{3}}{3}$

cos θ = $\frac{-1}{2}$ sec θ = -2

tan θ = $-\sqrt{3}$ cot θ = $\frac{\sqrt{3}}{3}$

4. $(\sqrt{2},\sqrt{2})$

$2+2=r^2$
$4=r^2$
$r=2$



sin θ = $\frac{\sqrt{2}}{2}$ csc θ = $\sqrt{2}$

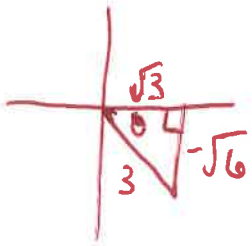
cos θ = $\frac{\sqrt{2}}{2}$ sec θ = $\sqrt{2}$

tan θ = 1 cot θ = 1

Find the missing five trig functions of θ.

5. $\cos\theta = \frac{\sqrt{3}}{3}$ in quadrant IV

$3+y^2=9$
$y^2=6$
$y=\sqrt{6}$

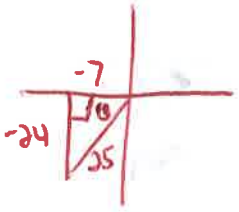


sin θ = $\frac{-\sqrt{6}}{3}$ csc θ = $\frac{-\sqrt{6}}{2}$ $\frac{3}{-\sqrt{6}} = \frac{-3\sqrt{6}}{6}$

sec θ = $\sqrt{3}$ $\frac{3}{\sqrt{3}}$

$\frac{-\sqrt{6}}{\sqrt{3}}$ tan θ = $\sqrt{2}$ cot θ = $\frac{-\sqrt{2}}{2}$ $\frac{\sqrt{3}}{\sqrt{6}}$

6. $\cot\theta = \frac{7}{24}$ in quadrant III



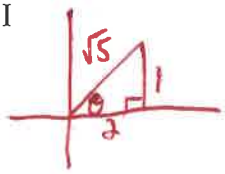
$\sin\theta =$ $-24/25$ $\csc\theta =$ $-25/24$

$\cos\theta =$ $-7/25$ $\sec\theta =$ $-25/7$

$\tan\theta =$ $24/7$

7. $\csc\theta = \frac{\sqrt{5}}{1}$ in quadrant I

$\sin\theta = \frac{1}{\sqrt{5}}$



$x^2+1=5$
$x^2=4$
$x=2$

$\frac{2}{\sqrt{5}}$

$\sin\theta =$ $\sqrt{5}/5$

$\cos\theta =$ $2\sqrt{5}/5$ $\sec\theta =$ $\sqrt{5}/2$

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

For each of the following angles, find the measure of the angle in standard position and the reference angle.

8. $\frac{23\pi}{4} = 7\pi/4$

standard position $7\pi/4$

reference angle $\pi/4$

9. -570°

standard position $150°$

reference angle $30°$

Solve each of the following triangles for the missing information in △PQR.

10. $\angle R = 45°$, p = 13, q = 19

$r^2 = p^2 + q^2 - 2pq\cdot\cos R$

$r^2 = 13^2 + 19^2 - 2\cdot13\cdot19\cdot\cos45°$

$r^2 = 530 - 494\cdot\cos45$

$r^2 = 180.689...$

$r = 13.443$

$\frac{\sin45}{13.443} = \frac{\sin P}{13}$

*Must Solve for P 1st. b/c Q is biggest. Can't use LOS for biggest side.

$\angle Q =$ [redacted] 91.854°

$\angle P =$ [redacted] 43.146°

r = 13.443

11. $\angle Q = 129.7°$, $\angle P = 23.8°$, p = 112

$\frac{\sin 23.8}{112} = \frac{\sin 129.7}{q}$

$\frac{\sin 23.8}{112} = \frac{\sin 26.5}{r}$

$\angle R = 26.5°$

r = 123.838

q = 213.539

↗ 2 solutions

12. $\angle R = 29.8°$, $r = 28.6$, $q = 35.8$

$\frac{\sin 29.8}{28.6} = \frac{\sin Q}{35.8}$ | $\frac{\sin 29.8}{28.6} = \frac{\sin 111.731°}{p}$ | $\frac{\sin 29.8°}{28.6} = \frac{\sin 8.669°}{p'}$

$\angle Q = 38.469°$
$\angle P = 111.731°$
$p = 53.458$

$\angle Q' = 141.531°$
$\angle P' = 8.669°$
$p' = 8.674$

13. $q = 12$, $p = 13$, $r = 20$

$20^2 = 12^2 + 13^2 - 2 \cdot 12 \cdot 13 \cdot \cos R$
$400 = 313 - 312\cos R$
$87 = -312\cos R$

$\frac{\sin 106.191}{20} = \frac{\sin Q}{12}$

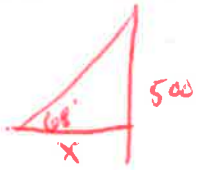
$\angle Q = 35.184$
$\angle R = 106.191$
$\angle P = 38.625$

14. $\angle P = 103.4$, $q = 81.3$, $p = 98.4$

$\frac{\sin 103.4}{98.4} = \frac{\sin Q}{81.3}$ | $\frac{\sin 103.4}{98.4} = \frac{\sin 23.113}{r}$

$\angle Q = 53.487°$
$\angle R = 23.113°$
$r = 39.708$

15. Your angle of elevation to the top of a 500-foot tower is 68°. How far are you from the base of the tower.

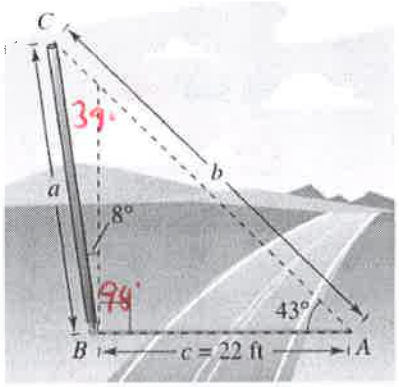


$\tan 68° = \frac{500}{x}$

$x = 500/\tan 68°$

$x = 202.013$ ft

16. A pole tilts toward the sun at an 8° angle from the vertical, and it cast a 22 foot shadow. The angle of elevation from the tip of the shadow to the top of the pole is 43°. How tall is the pole?



$\frac{\sin 39}{22} = \frac{\sin 43}{q}$

$q = 23.847$

17. Smile!!!!

Find the exact values of the following trig functions.

18. $\sin 330°$

$-\sin 30°$

19. $\cot \frac{-5\pi}{6} = \frac{7\pi}{6}$

$\cot 7\pi/6$

$\cot \pi/6 = \sqrt{3}/2 \div 1/2$

20. $\sec -240°$ $120°$

$-\cos 60° = -1/2$

21. $\cos 45°$

22. $\csc 3\pi = \pi$

$\sin \pi = 0$

23. $\cot -90° = 270°$

$\cot 270° = 0/-1$

24. $\tan \frac{19\pi}{6} = \frac{7\pi}{6}$

$\tan \pi/6 = 1/2 \div \sqrt{3}/2$

25. $\sin \frac{-10\pi}{3} = \frac{2\pi}{3}$

$\sin \pi/3 = \sqrt{3}/2$

26. $\cot -225 = 135°$

$-\cot 45° = -1$

27. $\csc \frac{13\pi}{4}$ $\frac{5\pi}{4}$

$-\sin \pi/4 = -\sqrt{2}/2$

28. $\sec 540° = 180$

$\cos 180 = -1$

29. $\tan \frac{-3\pi}{2} = \frac{\pi}{2}$

$\tan \pi/2 = \frac{1}{0}$

18. $-1/2$

19. $\sqrt{3}$

20. -2

21. $\sqrt{2}/2$

22. U

23. 0

24. $\sqrt{3}/3$

25. $\sqrt{3}/2$

26. -1

27. $-\sqrt{2}$

28. -1

29. U