Precalculus

Name Key

# Review - No Calculator

Date _____ Period ____

**Find the exact value of each trigonometric function.**

1) $\sin \frac{3\pi}{2}$ (-1)

2) $\cos 225°$ $-\frac{\sqrt{2}}{2}$

3) $\cot \frac{3\pi}{4}$ (-1)

4) $\sin \pi$ (0)

5) $\tan -\frac{2\pi}{3}$ $\sqrt{3}$

6) $\sec \frac{11\pi}{6}$ $\frac{2\sqrt{3}}{3}$

7) $\csc -\frac{3\pi}{2}$ (1)

8) $\cos \frac{4\pi}{3}$ $-\frac{1}{2}$

9) $\sec -45°$ $\sqrt{2}$

10) $\sec 240°$ (-2)

11) $\tan 300°$ $-\sqrt{3}$

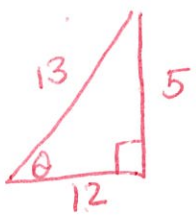
12) $\tan -\frac{5\pi}{6}$ $\frac{\sqrt{3}}{3}$

13) $\sin \frac{\pi}{3}$ $\frac{\sqrt{3}}{2}$

14) $\cos -\frac{7\pi}{4}$ $\frac{\sqrt{2}}{2}$

**Find the value of the trig function indicated.**

15) Find $\cot \theta$ if $\csc \theta = \frac{13}{5}$ hyp / opp




$5^2 + x^2 = 13^2$

$25 + x^2 = 169$

$x^2 = 144$

$x = 12$

$\cot\theta = \frac{adj}{opp}$

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

16) Find $\sin \theta$ if $\cot \theta = \frac{2}{1}$ adj / opp


$2^2 + 1^2 = x^2$

$5 = x^2$

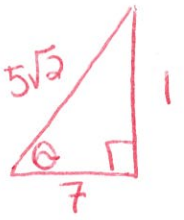
$x = \sqrt{5}$

$\sin\theta = \frac{opp}{hyp}$

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

$= \frac{\sqrt{5}}{5}$

17) Find $\tan\theta$ if $\sec\theta = \frac{5\sqrt{2}}{7}$ hyp / adj




$7^2 + x^2 = (5\sqrt{2})^2$

$49 + x^2 = 25(2)$

$49 + x^2 = 50$

$x^2 = 1$

$x = 1$

$\tan\theta = \frac{\text{opp}}{\text{adj}}$

$\tan\theta = \frac{1}{7}$

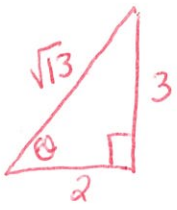
18) Find $\sin\theta$ if $\csc\theta = \frac{5}{4}$ hyp / opp


(Don't need to find adjacent)

$\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\sin\theta = 4/5$

19) Find $\cos\theta$ if $\tan\theta = \frac{3}{2}$ opp / adj




$3^2 + 2^2 = x^2$

$13 = x^2$

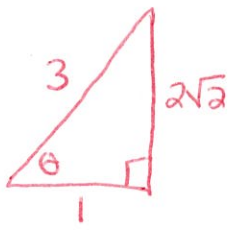
$x = \sqrt{13}$

$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

$= \frac{2}{\sqrt{13}} \cdot \frac{\sqrt{13}}{\sqrt{13}}$

$\cos\theta = \frac{2\sqrt{13}}{13}$

20) Find $\sec\theta$ if $\tan\theta = \frac{2\sqrt{2}}{1}$ opp / adj




$1^2 + (2\sqrt{2})^2 = x^2$

$1 + 4(2) = x^2$

$9 = x^2$

$x = 3$

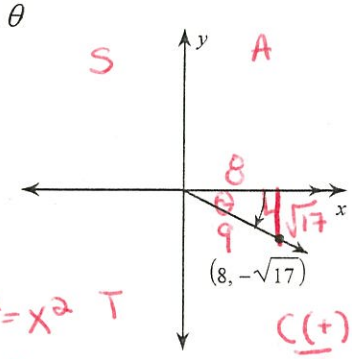
$\sec\theta = \frac{\text{hyp}}{\text{adj}}$

$\sec\theta = \frac{3}{1}$

$\sec\theta = 3$

**Use the given point on the terminal side of angle $\theta$ to find the value of the trigonometric function indicated.**

21) $\cos\theta$




$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

$\cos\theta = \frac{8}{9}$

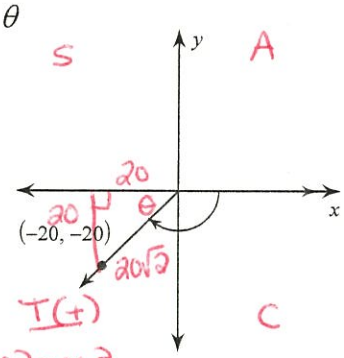
$8^2 + (\sqrt{17})^2 = x^2$

$64 + 17 = x^2$

$81 = x^2$

$x = 9$

22) $\sin\theta$




$\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$= \frac{20}{20\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$\sin\theta = \frac{\sqrt{2}}{2}$

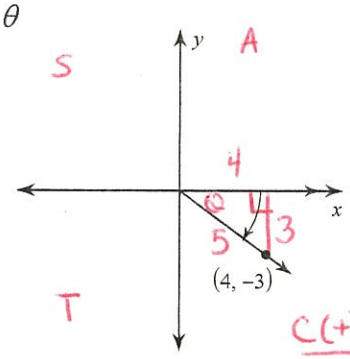
$20^2 + 20^2 = x^2$

$800 = x^2$

$\sqrt{400} \cdot \sqrt{2} = x^2$

$20\sqrt{2} = x$

23) $\sec\theta$




$\sec\theta = \frac{\text{hyp}}{\text{adj}}$

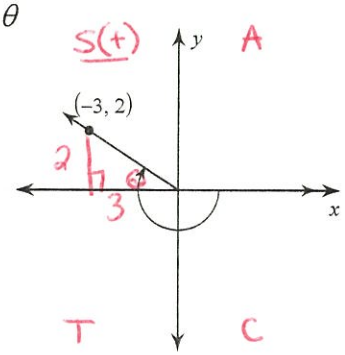
$4^2 + 3^2 = x^2$

$25 = x^2$

$5 = x$

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

24) $\cot\theta$

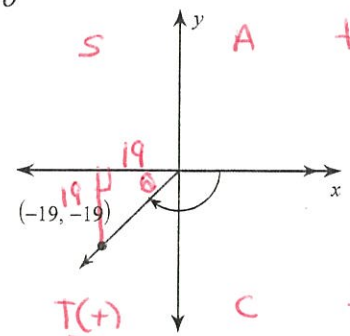



$\cot\theta = \frac{\text{adj}}{\text{opp}}$

(Don't need to find hypotenus)

$\cot\theta = \frac{-3}{2}$

25) $\tan\theta$



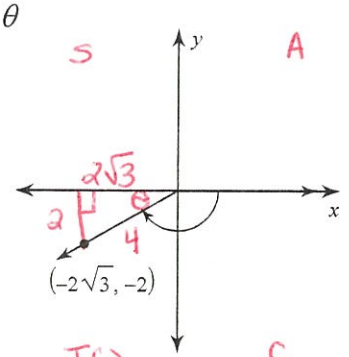

$\tan\theta = \frac{opp}{adj}$

(Don't need to find hypotenus)

$\tan\theta = \frac{19}{19}$

$\tan\theta = 1$

26) $\csc\theta$




$\csc\theta = \frac{hyp}{opp}$

$\csc\theta = \frac{4}{2}$

$\csc\theta = -2$

$2^2 + (2\sqrt{3})^2 = x^2$

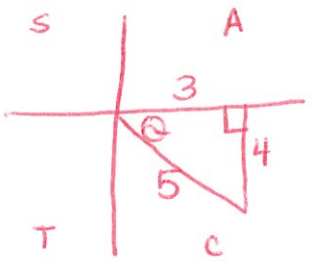
$4 + 4(3) = x^2$

$16 = x^2$

$x = 4$

27) $\sin\theta$; $(3, -4)$

x y




$\sin\theta = \frac{opp}{hyp}$

$3^2 + 4^2 = x^2$

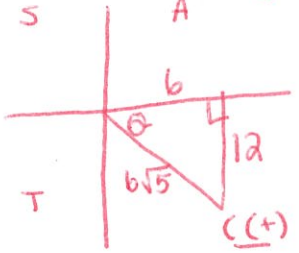
$25 = x^2$

$5 = x$

$\sin\theta = -\frac{4}{5}$

28) $\cos\theta$; $(6, -12)$

x y




$6^2 + 12^2 = x^2$

$180 = x^2$

$\sqrt{36}\cdot\sqrt{5} = x^2$

$6\sqrt{5} = x$

$\cos\theta = \frac{adj}{hyp}$

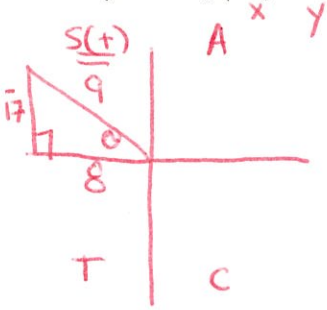
$= \frac{6}{6\sqrt{5}}$

$= \frac{1}{\sqrt{5}}\cdot\frac{\sqrt{5}}{\sqrt{5}}$

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

29) $\csc\theta$; $(-8, \sqrt{17})$

x y




$8^2 + (\sqrt{17})^2 = x^2$

$64 + 17 = x^2$

$81 = x^2$

$x = 9$

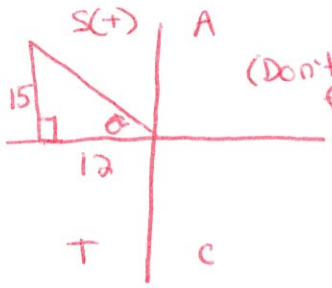
$\csc\theta = \frac{hyp}{opp}$

$= \frac{9}{\sqrt{17}}\cdot\frac{\sqrt{17}}{\sqrt{17}}$

$\csc\theta = \frac{9\sqrt{17}}{17}$

30) $\cot\theta$; $(-12, 15)$

x y




$\cot\theta = \frac{adj}{opp}$

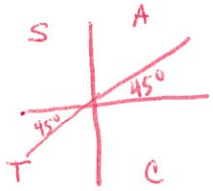
(Don't need to find hypotenus)

$\cot\theta = -\frac{12}{15}$

$\cot\theta = -4/5$

**Solve each equation for $0 \le \theta < 360$.**

31) $\tan\theta = 1$

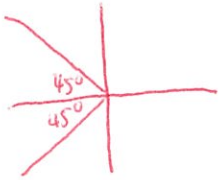



45°, 225°

↑ tan is positive in Q3 & Q1

32) $\cos\theta = -\frac{\sqrt{2}}{2}$

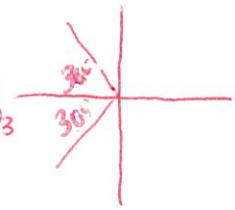
cos is negative in Q2 & Q3




135°, 225°

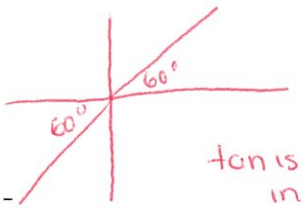
33) $-\frac{\sqrt{3}}{2} = \cos\theta$

cos is negative in Q2 & Q3




150°, 210°

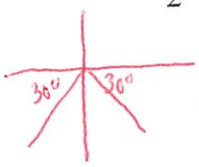
34) $\tan\theta = \sqrt{3}$




60°, 240°

tan is positive in Q1 & Q3

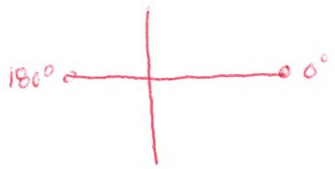
35) $\sin\theta = -\frac{1}{2}$




sin is negative in Q3 & Q4

210°, 330°

36) $0 = \tan\theta$




0°, 180°

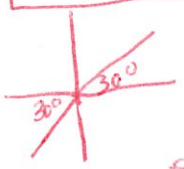
37) $4 - \frac{3}{4}\cdot\tan\theta = \frac{16-\sqrt{3}}{4}$

$4 - \frac{3}{4}\tan\theta = \frac{16}{4} - \frac{\sqrt{3}}{4}$

$4 - \frac{3}{4}\tan\theta = 4 - \frac{\sqrt{3}}{4}$

$-\frac{3}{4}\tan\theta = -\frac{\sqrt{3}}{4}$

$\tan\theta = -\frac{4\sqrt{3}}{12} = \frac{\sqrt{3}}{3}$




tan is positive in Q1, Q3

30°, 210°

$\tan\theta = \frac{\sqrt{3}}{3}$

38) $-5 + \sin\theta = -5$

$\sin\theta = 0$

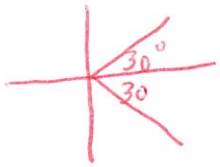

0°, 180°

39) $-5 - \frac{1}{2}\cdot\cos\theta = \frac{-20-\sqrt{3}}{4}$

$-5 - \frac{1}{2}\cos\theta = -\frac{20}{4} - \frac{\sqrt{3}}{4}$

$-\frac{1}{2}\cos\theta = -\frac{\sqrt{3}}{4}$

$\cos\theta = \frac{2\sqrt{3}}{4} = \frac{\sqrt{3}}{2}$




cos is positive in Q1 & Q4

30°, 330°

$\cos\theta = \frac{\sqrt{3}}{2}$

40) $1 - 2\cos\theta = 0$

$-2\cos\theta = -1$

$\cos\theta = 1/2$

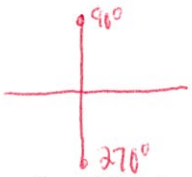
cos is positive in Q1 & Q4


60°, 300°

41) $3 - \frac{1}{2}\cdot\cos\theta = 3$

$-\frac{1}{2}\cos\theta = 0$

$\cos\theta = 0$




90°, 270°

42) $1 + \frac{1}{4}\cdot\sin\theta = \frac{4+\sqrt{3}}{4}$

$1 + \frac{1}{4}\sin\theta = \frac{4}{4} + \frac{\sqrt{3}}{4}$

$\frac{1}{4}\sin\theta = \frac{\sqrt{3}}{4}$

$\sin\theta = \frac{4\sqrt{3}}{4}$

$\sin\theta = \sqrt{3}$

No solution

43) $-5 + 6\sin\theta = -2$

$6\sin\theta = 3$

$\sin\theta = 1/2$

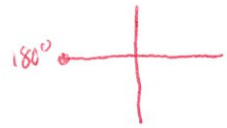

sin is positive in Q1 & Q2

30°, 150°

44) $9 = 5 - 4\cos\theta$

$4 = -4\cos\theta$

$-1 = \cos\theta$




180°