Inverse Trig Functions &
Composite Trig Functions Worksheet

Name_____

Directions: Write the *exact* trigonometric value of the following problems.

1. $\cos^{-1}\frac{\sqrt{3}}{2}$

2. $\sin^{-1}\frac{\sqrt{2}}{2}$

3. $\arcsin(-1)$

4. $\cos^{-1}(-1)$

5. $\arctan(1)$

6. $\tan^{-1}(-1)$

7. $\arcsin\left(-\frac{\sqrt{2}}{2}\right)$

8. $\tan^{-1}\sqrt{3}$

9. $\arccos\frac{1}{2}$

10. $\tan^{-1}\left(-\frac{\sqrt{3}}{3}\right)$

11. $\arccos\left(-\frac{\sqrt{2}}{2}\right)$

12. $\cos^{-1}0$

13. $\tan^{-1}(0)$

14. $\sin^{-1}0$

15. $\cos^{-1}1$

16. $\cos\left(\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)$

17. $\sin\left(\cos^{-1}\left(-\frac{1}{2}\right)\right)$

18. $\tan\left(\sin^{-1}0\right)$

19. $\cot\left(\cos^{-1} 0\right)$

20. $\sin^{-1}\left(\cos\left(\frac{7\pi}{6}\right)\right)$

21. $\cos^{-1}\left(\sin\left(\frac{5\pi}{4}\right)\right)$

22. $\cos^{-1}\left(\sin\left(\frac{\pi}{6}\right)\right)$

23. $\sin^{-1}\left(\cos\left(\frac{5\pi}{3}\right)\right)$

24. $\tan^{-1}\left(\sin\left(\frac{\pi}{2}\right)\right)$

25. $\tan^{-1}\left(\cos\left(\frac{\pi}{2}\right)\right)$

26. $\sin^{-1}\left(\sin\left(\frac{3\pi}{4}\right)\right)$

27. $\cos^{-1}\left(\sin\left(-\frac{\pi}{3}\right)\right)$

28. $\cos\left(\sin^{-1}\left(\frac{1}{2}\right)\right)$

29. $\sin\left(\cos^{-1}\left(\frac{1}{2}\right)\right)$

30. $\tan\left(\cos^{-1}\left(\frac{-1}{2}\right)\right)$

31. $\sin^{-1}\left(\cos\left(\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)\right)$

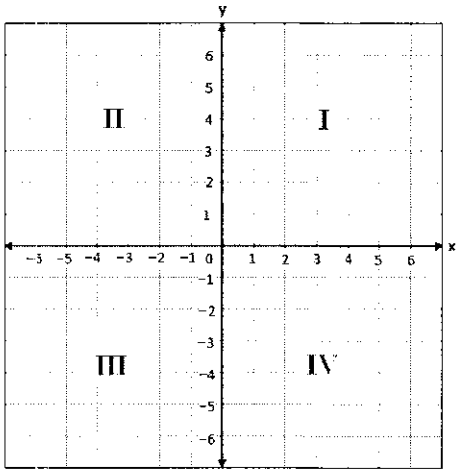
32. $\tan\left(\sin^{-1}\left(\cos\left(\frac{\pi}{2}\right)\right)\right)$

Notes: Right Triangle Trig

Important things to remember:

- The Pythagorean Theorem is _____.
- The six trig ratios are:

- Use the acronym "Always Study Trig Carefully" to remember which trig functions are positive in the quadrants:



Problem type 1: Finding a trig value given a trig value (no constraints)

Given the $\cos\theta = \frac{12}{37}$, find $\csc\theta$

You try: Given $\cot\beta = \frac{11}{60}$, find $\sin\beta$

Problem type 2: Finding trig values given a coordinate point (the constraint is the quadrant in which the point is located!)

EX 1: The point (20, -21) is on the terminal side of an angle in standard position. Determine the exact values of the six trigonometric functions of the angle.

You try: The point (-28, -45) is on the terminal side of an angle in standard position. Determine the exact values of the six trigonometric functions of the angle.

Problem type 3: Given a function value and an additional constraint

EX 1: Given $\sin\theta = \frac{24}{25}$; constraint: θ lies in Quadrant 2. Find the other five trig values.

EX 2: Given $\sec\theta = -\frac{113}{15}$ and $\tan\theta > 0$, find the other five trig values.

You try: Given $\cot\theta = \frac{-17}{144}$ and $\cos\theta < 0$, find the other five trig values.