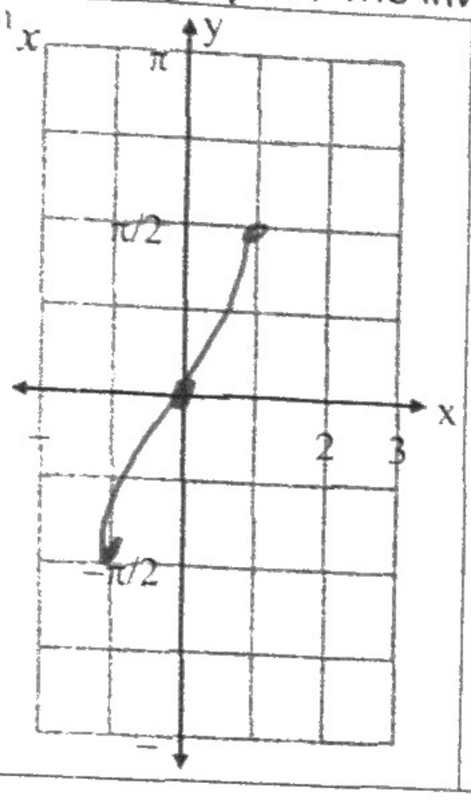
#12Pre-Calculus Review TEST 2.2 Name Key

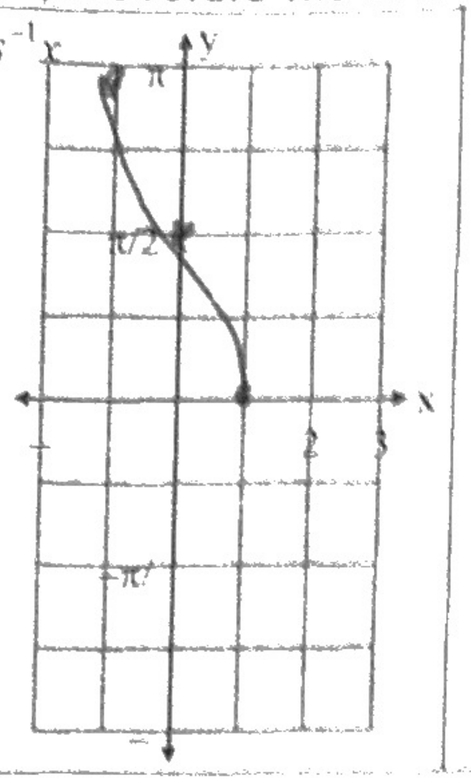
Non-Calculator Portion:

I. Sketch the graph of the inverse functions, then state the domain and range of each

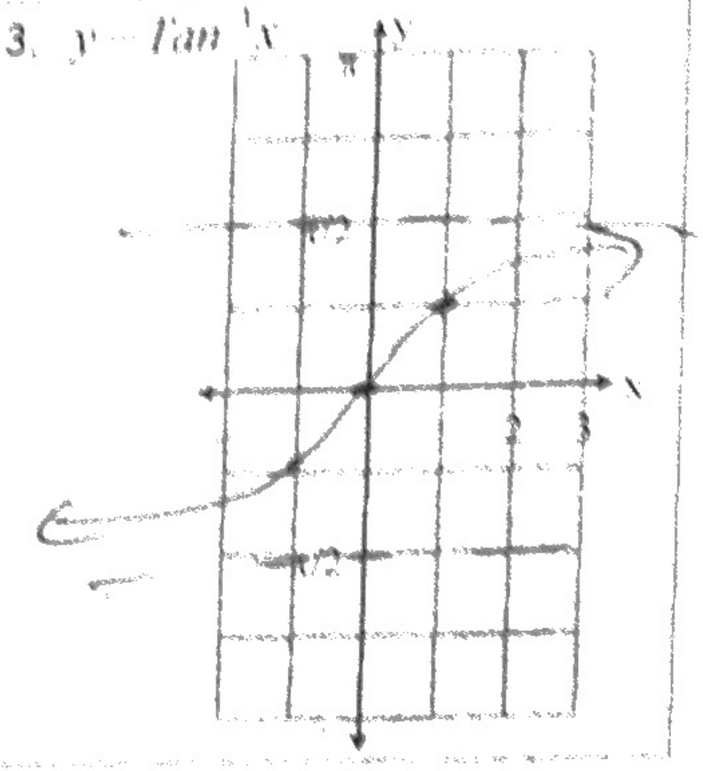
1. $y = Sin^{-1}x$



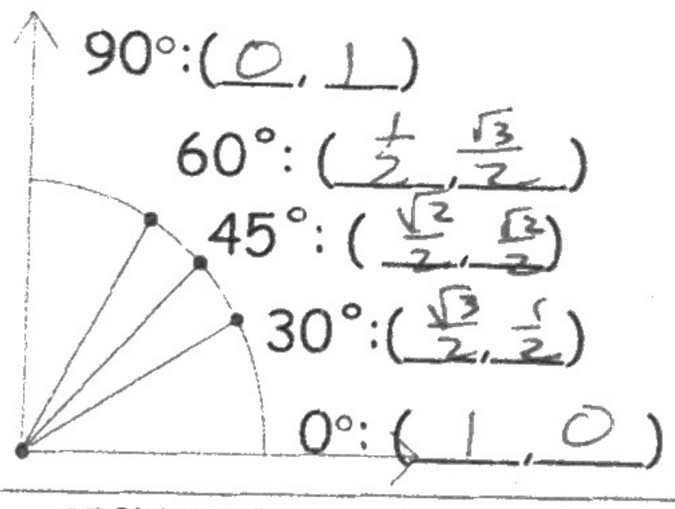
2. $y = Cos^{-1}x$



3. $y = Tan^{-1}x$



Find the EXACT VALUES for the following. If the FINAL answer is an angle, give it in degrees.



4. $Sec^{-1}(-2) = \frac{2\pi}{3}$ (120°)

5. $Tan^{-1}(-\sqrt{3}) = \frac{-\pi}{3}$ (−60°)

6. $\text{Arccos}\frac{\sqrt{2}}{2} = \frac{\pi}{4}$ (45°)

7. $\text{Arcsec}(-1) = \pi$ (180°)

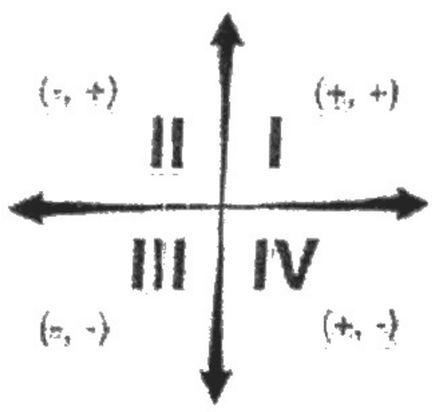
8. $\text{Arccsc}(-\sqrt{2}) = \frac{-\pi}{4}$ (−45°)

9. $\text{Arcsin}(0) = 0°$

10. $Cot^{-1}(-1)$ (−45°)

11. $Csc^{-1}\frac{2\sqrt{3}}{3} = 60°$

SIGNS OF TRIG FUNCTIONS



12. $Sin^{-1}\frac{1}{2} = 30°$

13. $\sec\left(Cos^{-1}\frac{\sqrt{2}}{2}\right) = \frac{2\sqrt{2}}{3}$

14. $\cos\left(Sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right) = \frac{1}{2}$

15. $Tan^{-1}(\tan 270°)$ undefined

16. $Cos^{-1}(\cos 315°) = 45°$

17. $\cos\left(\text{Arcsin}\frac{5}{13}\right) = \frac{12}{13}$

19. $\cot\left(\text{Arcsin}\frac{2}{7}\right)$ $\frac{3\sqrt{5}}{2}$

20. $Arc\cos(\sin 120°) = 30°$

Calculator

Evaluate to the nearest four decimal places if a trig. value **OR** to the nearest tenth of a degree if an angle.

21. $Tan^{-1}2.345$	22. $Cot^{-1}(-0.4631)$	23. $Sec^{-1}5.326$	24. $Csc^{-1}(-32.78)$
25. $\sin(Cos^{-1}0.741)$	26. $\tan(Sec^{-1}-4.039)$	27. $\cos(Csc^{-1}9.285)$	28. $\tan(Sin^{-1}1.345)$

Verify the following identities:

29. $\tan\theta = \dfrac{1}{\cot\theta}$

$\frac{1}{\cot x} = \frac{1}{\cot x}$

30. $\sin^2\theta + \cos^2\theta = 1$

$1 = 1$

31. $\dfrac{\tan\theta}{\sec\theta} = \dfrac{1}{\csc\theta}$

$\frac{\frac{\sin\theta}{\cos\theta}}{\frac{1}{\cos\theta}} =$

$\frac{\sin\theta}{\cos\theta} \cdot \frac{\cos\theta}{1}$

$\sin\theta = \frac{1}{\csc\theta} = \frac{1}{\csc\theta}$

32. $1-2\sin^2\theta = 2\cos^2\theta - 1$

$1-2(1-\cos^2 x)$

$1-2+\cos^2 x$

$\cos^2 x - 1 = \cos^2 x - 1$

$\cos^2 x + \sin^2 x = 1$

$\sin^2 x = 1 - \cos^2 x$

Prove each of the following using the **Identities**

33. $\cos\theta\csc\theta = \cot\theta$

$\cos\theta \cdot \frac{1}{\sin\theta} =$

$\frac{\cos\theta}{\sin\theta} =$

$\cot\theta = \cot\theta$

34. $\dfrac{\sin\theta}{\csc\theta} + \dfrac{\cos\theta}{\sec\theta} = 1$

$\frac{\sin\theta}{\frac{1}{\sin\theta}} + \frac{\cos\theta}{\frac{1}{\cos\theta}} =$

$\sin\theta \cdot \sin\theta + \cos\theta \cdot \cos\theta =$

$\sin^2\theta + \cos^2\theta =$

$1 = 1$

35. $\dfrac{\tan\theta + \cos\theta}{\sin\theta} = \sec\theta + \cot\theta$

$\frac{\frac{\sin\theta}{\cos\theta} + \cos\theta}{\frac{\sin\theta}{1}} =$

$\frac{1}{\sin\theta}\left[\frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{1}\right] =$

$\frac{1}{\cos\theta} + \frac{\cos\theta}{\sin\theta} =$

$\sec\theta + \cot\theta = \sec\theta + \cot\theta$

36. $\dfrac{\tan\theta}{\csc\theta} = \sec\theta - \cos\theta$

$\frac{\frac{\sin\theta}{\cos\theta}}{\frac{1}{\sin\theta}} =$

$\frac{\sin\theta}{\cos\theta} \cdot \frac{\sin\theta}{1} =$

$\frac{\sin^2\theta}{\cos\theta} =$

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

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

$\sec\theta - \cos\theta =$

$\sec\theta - \cos\theta$