Pre-calculus Name_____

Review Problems: solving trig. equations and inverse functions

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

1) $\frac{1}{2} = \sin\theta$ — $30° + 150°$

2) $\tan\theta = \frac{\sqrt{3}}{3}$ — $30° + 210°$

3) $\csc\theta = \frac{2\sqrt{3}}{3}$ — $\sin\theta = \frac{\sqrt{3}}{2}$ — $60° + 120°$

4) $-\frac{\sqrt{3}}{2} = \cos\theta$ — $150° + 210°$

5) $\sqrt{2} = \sec\theta$ — $\cos = \frac{\sqrt{2}}{2}$ — $45°; 315°$

6) $\cot\theta = -\frac{\sqrt{3}}{3}$ — $\tan\theta = -\sqrt{3}$ — $120° + 300°$

Solve each equation for $0 \le \theta < 2\pi$.

7) $-\frac{\sqrt{2}}{2} = \cos\theta$ — $3\pi/4 ; 5\pi/4$

8) $-\sqrt{2} = \csc\theta$ — $\sin\theta = -\frac{\sqrt{2}}{2}$ — $5\pi/4 ; 7\pi/4$

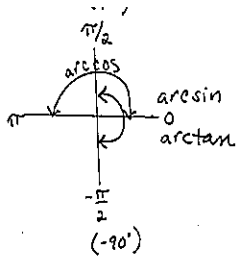
9) $\sin\theta = 0$ — $0 ; \pi$

10) $\tan\theta = -\sqrt{3}$ — $2\pi/3 , 5\pi/3$

11) $-2 = \sec\theta$ — $\cos\theta = -\frac{1}{2}$ — $\frac{2\pi}{3} , \frac{4\pi}{3}$

12) $\cot\theta = 0$ — $\tan\theta = \frac{1}{0} \to$ undef $\times$ — $\pi/2 , 3\pi/2$

Evaluate the following without a calculator:



$\arcsin(\sqrt{3}/2) = \pi/3$

$\arcsin(-1) = -\pi/2$

$\arccos(0) = \pi/2$

$\arccos(\sqrt{2}/2) = \pi/4$

$\arctan(0) = 0$

$\arctan(-1) = -\pi/4$

$\arcsin(\sqrt{3}) =$ undefined (↑ greater than one)

$\arctan(1) = \pi/4$

$\arccos(-\sqrt{2}/2) = 3\pi/4$

$\arctan(-\sqrt{3}/3) = -\pi/6$

$\arccos(-1/2) = \frac{2\pi}{3}$

$\arctan(\sqrt{3}) = \pi/3$

Evaluate each without a calculator:

$\cos(\arcsin(-1)) =$ ↓ $-\pi/2$ — $\cos(-\pi/2) = 0$

$\tan(\arccos(-\frac{1}{2})) =$ ↓ $2\pi/3$ — $\tan(2\pi/3) = -\sqrt{3}$

$\sin(\arctan(-\frac{\sqrt{3}}{3})) =$ ↓ $-\pi/6$ — $\sin(-\pi/6) = -1/2$

$\arctan(\tan\frac{5\pi}{6}) =$ ↓ $-\sqrt{3}/3$ — $\arctan(-\sqrt{3}/3) = -\pi/6$

$\arccos(\sin\frac{4\pi}{3}) =$ ↓ $-\sqrt{3}/2$ — $\arccos(-\sqrt{3}/2) = 5\pi/6$

$\arcsin(\cos\frac{7\pi}{6}) =$ ↓ $-\sqrt{3}/2$ — $\arcsin(-\sqrt{3}/2) = -\pi/3$

Evaluate each of the following. Sketch a triangle in the appropriate quadrant.

$\cos(\arcsin\frac{5}{13}) =$ — $\cos\theta = \pm 12/13$

* don't forget +/- sign depending on Quadrant. S | A / T | C

$\sec(\arctan\frac{-3}{5}) =$ — $5^2 + 3^2 = c^2$, $25 + 9 = c^2$, $34 = c^2$ — $\sec\theta = \frac{+\sqrt{34}}{5}$

$\tan(\arcsin\frac{-5}{6}) =$ — $b^2 + 5^2 = 6^2$, $b^2 + 25 = 36$, $b^2 = 11$ — $\tan\theta = \frac{-5}{\sqrt{11}} = \frac{-5\sqrt{11}}{11}$

$\csc(\arccos\frac{-2}{3}) =$ — $b^2 + 2^2 = 3^2$, $b^2 + 4 = 9$, $b^2 = 5$ — $\csc\theta = \frac{+3}{\sqrt{5}} = \frac{+3\sqrt{5}}{5}$

$\cot(\arccos\frac{x}{1}) =$ — $x^2 + b^2 = 1^2$, $b^2 = 1 - x^2$, $b = \sqrt{1-x^2}$ — $\cot\theta = \frac{+x}{\sqrt{1-x^2}}$

$\cos(\arcsin\frac{2x}{1}) =$ — $b^2 + (2x)^2 = 1^2$, $b^2 = 1 - 4x^2$, $b = \sqrt{1-4x^2}$ — $\cos\theta = \frac{\sqrt{1-4x^2}}{1}$

$\tan(\arccos\frac{1}{3x}) =$ — $1 + b^2 = (3x)^2$, $b^2 = 9x^2 - 1$, $b = \sqrt{9x^2-1}$ — $\tan\theta = \frac{\sqrt{9x^2-1}}{1}$