6.2 #1-41 odd - due Mon. 01/09

6.1 #1-69 odd (proofs) - due Tues. 01/17

Due Mon. 01/23:

- 6.3 #1-24 all; 30-36 all; 49-93 odd Double & Half-angle Identities
- 6.5 #1-24 all ; #25-55 odd Inverse Trig Functions

Test #3 - Tues. 01/24 (6.1, 6.2, 6.3, 6.5)

Upcoming: Solving Trig Equations

- 6.6 #1-21 odd finding solutions between 0 and 2pi
  #61-69 odd finding all possible solutions (+2pi*k)
  #71-83 odd

(57) $1-\tan^2 x = \dfrac{\cos 2x}{\cos^2 x}$

$\dfrac{a \pm b}{c} = \dfrac{a}{c} \pm \dfrac{b}{c}$

$RHS = \dfrac{\cos 2x}{\cos^2 x} = \dfrac{\cos^2 x - \sin^2 x}{\cos^2 x} = \dfrac{\cos^2 x}{\cos^2 x} - \dfrac{\sin^2 x}{\cos^2 x}$

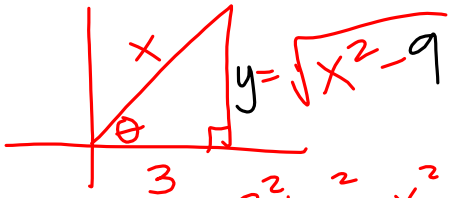
$= 1 - \tan^2 x$

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

2. $\sin^{-1}\left[\tan\left(\frac{-\pi}{4}\right)\right] = \sin^{-1}(-1) = \boxed{-\frac{\pi}{2}}$

3. $\tan\left(\cos^{-1}\frac{3}{x}\right)$, $x>0$

θ

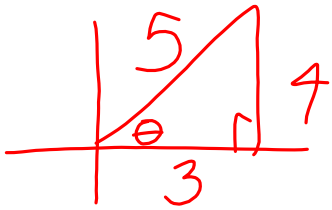


$3^2+y^2=x^2$

$y^2=x^2-3^2$

$y=\sqrt{x^2-9}$

$= \boxed{\frac{\sqrt{x^2-9}}{3}}$

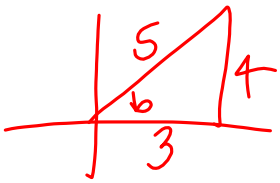


4. $\sin\left(2\cos^{-1}\frac{3}{5}\right)$

θ

$\sin 2\theta = 2\sin\theta\cos\theta = 2\left(\frac{4}{5}\right)\left(\frac{3}{5}\right) = \boxed{\frac{24}{25}}$

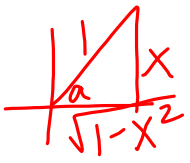
5. $\sin\left(\underbrace{\sin^{-1}\frac{1}{2}}_{a}+\underbrace{\cos^{-1}\frac{3}{5}}_{b}\right)$



$\sin(a+b)=\sin a\cos b+\cos a\sin b$

$=\frac{1}{2}\cdot\frac{3}{5}+\frac{\sqrt{3}}{2}\cdot\frac{4}{5}=\boxed{\frac{3+4\sqrt{3}}{10}}$

6. $\cos\left(\underbrace{\sin^{-1}x}_{a}-\underbrace{\cos^{-1}y}_{b}\right)$ $x,y>0$



$\cos(a-b)=\cos a\cos b+\sin a\sin b$

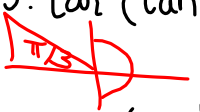
$=\sqrt{1-x^2}\cdot y+x\cdot\sqrt{1-y^2}$

$=y\sqrt{1-x^2}+x\sqrt{1-y^2}$

39. $\cos^{-1}\left(\cos\left(\frac{-\pi}{4}\right)\right)=\boxed{\frac{\pi}{4}}$

41. $\sin^{-1}\left(\sin\frac{\pi}{5}\right)=\boxed{\frac{\pi}{5}}$

43. $\tan^{-1}\left(\tan\frac{2\pi}{3}\right)=\boxed{-\frac{\pi}{3}}$



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

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

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

55. $\sin\left(\tan^{-1}\frac{a}{3}\right)$ $a\to 0$

63. $\cos\left(\sin^{-1}\frac{\sqrt{2}}{2}+\cos^{-1}\frac{3}{5}\right)$