

Day 1

1) a.  $\sin^{-1}(\frac{1}{2}) = \frac{\pi}{6}$

b.  $\cos^{-1}(\frac{1}{2}) = \frac{\pi}{3}$

c.  $\cos^{-1}(2) = \text{DNE}$

st a.  $\sin^{-1}(1) = \frac{\pi}{2}$

b.  $\cos^{-1}(1) = 0$

c.  $\cos^{-1}(-1) = \pi$

3) a.  $\sin^{-1}(\frac{\sqrt{2}}{2}) = \frac{\pi}{4}$

b.  $\cos^{-1}(\frac{\sqrt{2}}{2}) = \frac{\pi}{4}$

c.  $\sin^{-1}(-\frac{\sqrt{2}}{2}) = -\frac{\pi}{4}$

7) a.  $\tan^{-1}(\frac{\sqrt{3}}{3}) = \frac{\pi}{6}$

b.  $\tan^{-1}(-\frac{\sqrt{3}}{3}) = -\frac{\pi}{6}$

c.  $\sin^{-1}(-2) = \text{DNE}$

9) a.  $\sin^{-1}(0.13844) = .013844$

~~K~~

b.  $\cos^{-1}(-0.9276) = 2.75876$

~~K~~

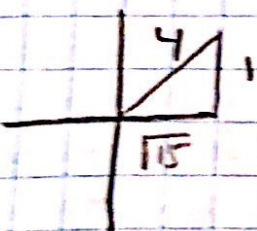
11) a.  $\tan^{-1}(1.23456) = .88998$

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b.  $\sin^{-1}(1.23456) = \text{DNE}$

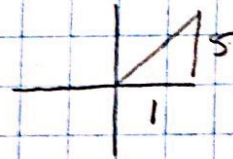
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13)  $\sin(\sin^{-1}(\frac{1}{4})) = \frac{1}{4}$



$17x^2 = 42$   
 $x^2 = 15$

15)  $\tan(\tan^{-1}(5)) = 5$



17)  $\cos^{-1}(\cos(\frac{\pi}{3})) = \frac{\pi}{3}$   
 $\cos^{-1}(\frac{1}{2})$

19)  $\sin^{-1}[\sin(-\frac{\pi}{6})] = -\frac{\pi}{6}$   
 $\sin^{-1}(-\frac{1}{2})$

21)  $\tan^{-1}(\tan(\frac{2\pi}{3})) = \frac{2\pi}{3}$   
 $\tan^{-1}(-\sqrt{3})$

23)  $\tan(\sin^{-1}(\frac{1}{2})) = \frac{\sqrt{3}}{3}$   
 $\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}$

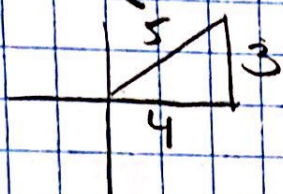


$$25) \cos(\sin^{-1} \frac{\sqrt{3}}{2}) = \frac{1}{2} \quad \therefore \dots$$

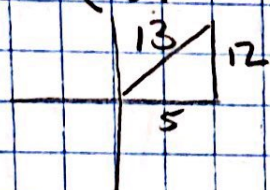
$$27) \frac{\tan^{-1}(2 \sin \frac{\pi}{3})}{\tan^{-1}(2 \cdot \frac{\sqrt{3}}{2})} = \frac{\pi}{3}$$

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

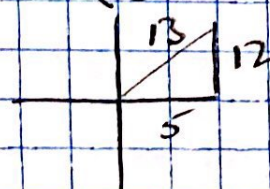
$$29) \sin(\cos^{-1}(3/5)) = \frac{4}{5}$$



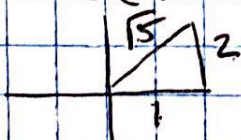
$$31) \sin(\tan^{-1} 12/5) = \frac{12}{13}$$



$$33) \sec(\sin^{-1} 12/13) = \frac{13}{5}$$

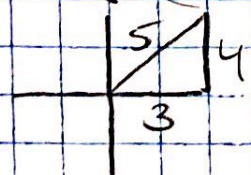


$$35) \cos(\tan^{-1} 2) = \frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5}$$



$$37) \sin(2 \cos^{-1} 3/5) \leftarrow \text{double } \theta$$

2 sin  $\theta$  cos  $\theta$



$$2 \sin(\cos^{-1}(3/5)) \cos(\cos^{-1}(3/5))$$

$$2 \left(\frac{4}{5}\right) \left(\frac{3}{5}\right)$$

$$\frac{24}{5}$$

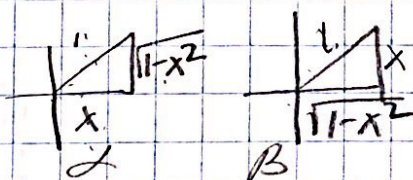


$$39) \sin(\sin^{-1} \frac{1}{2} + \cos^{-1} \frac{1}{2})$$

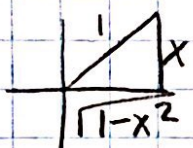
$$\sin(\sin^{-1} \frac{1}{2}) \cos(\cos^{-1} \frac{1}{2}) + \cos(\sin^{-1} \frac{1}{2}) \sin(\cos^{-1} \frac{1}{2})$$

$$\frac{1}{2} \cdot \frac{1}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{2}$$

$$\frac{1}{4} + \frac{3}{4}$$



$$41) \cos(\sin^{-1} x) = \sqrt{1-x^2}$$



$$47) \cos(\cos^{-1} x + \sin^{-1} x)$$

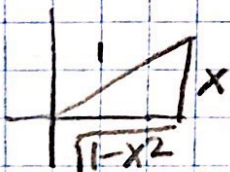
$$\cos \alpha \cos \beta - \sin \alpha \sin \beta$$

$$\cos(\cos^{-1} x) \cos(\sin^{-1} x) - \sin(\cos^{-1} x) \sin(\sin^{-1} x)$$

$$x(\sqrt{1-x^2}) - \sqrt{1-x^2}(x)$$

$$0$$

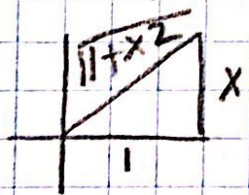
$$43) \tan(\sin^{-1} x) = \frac{x}{\sqrt{1-x^2}}$$



$$45) \cos(2 \tan^{-1} x)$$

$$2 \cos^2 \theta - 1$$

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



$$2 \left( \frac{1}{\sqrt{1+x^2}} \right)^2 - 1$$

$$\frac{2}{1+x^2} - 1$$

$$\frac{2 - (1+x^2)}{1+x^2}$$

$$\frac{1-x^2}{1+x^2}$$