# Composition of Inverse Trig Functions

Sec 4.7 pg 352 # 31-53 odd

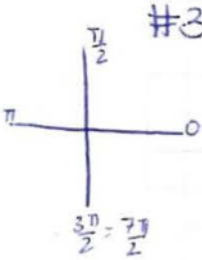
#31) $\tan(\arctan 35)$ — Domain $\forall \mathbb{R}$ # ✓ So we can cancel

$= \boxed{35}$

#33) $\sin[\arcsin(-0.1)]$ — Is in Domain of arcsin $[-1,1]$ So we can cancel

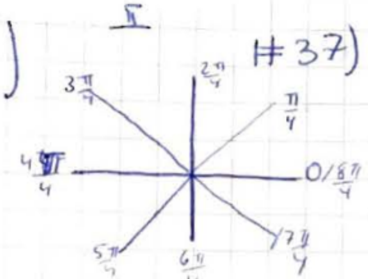
$= \boxed{-0.1}$

#35) $\arccos\left(\cos \frac{7\pi}{2}\right)$




$\arccos(0)$

$= \boxed{\frac{\pi}{2}}$




#37) $\arcsin\left(\sin \frac{7\pi}{4}\right)$

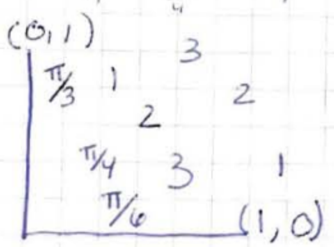
$\arcsin\left(-\frac{\sqrt{2}}{2}\right)$

$= \boxed{-\frac{\pi}{4}}$

OR $\cancel{\arcsin}\left(\cancel{\sin} \frac{7\pi}{4}\right)$

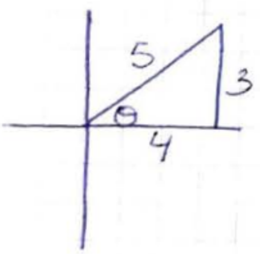
$= \boxed{-\frac{\pi}{4}}$

Coterminal to $-\pi/4$ Since $-\pi/4$ is Range of arcsin then Cancle




Sohcahtoa

#39) $\sec\left(\arcsin \frac{3}{5}\right)$




$x^2 + 3^2 = 5^2$

$x^2 + 9 = 25$

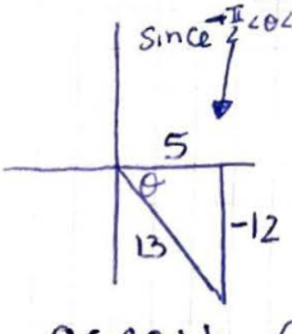
$x^2 = 16$

$x = 4$


$\sec = \frac{H}{A} = \quad \sec\theta = \boxed{\frac{5}{4}}$

#41) $\csc\left[\arctan\left(-\frac{12}{5}\right)\right]$

since $-\frac{\pi}{2} < \theta < 0$




$5^2 + (-12)^2 = c^2$

$25 + 144 = c^2$

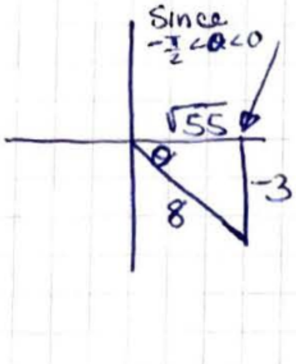
$169 = c^2$

$13 = c$

$\csc\theta \to \frac{h}{o} = \boxed{-\frac{13}{12}}$

#43) $\tan\left[\arcsin\left(-\frac{3}{8}\right)\right]$

Since $-\frac{\pi}{2} < \theta < 0$




$a^2 + (-3)^2 = 8^2$

$a^2 + 9 = 64$

$a^2 = 55$

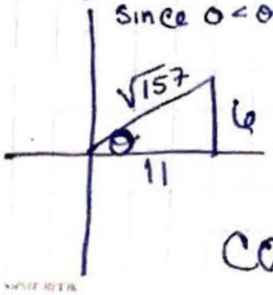
$a = \sqrt{55}$

$\tan\theta = \frac{-3}{\sqrt{55}}$

$= \boxed{-\frac{3\sqrt{55}}{55}}$

#45) $\cot(\arctan 6/11)$

since $0 < \theta < \pi/2$.




$6^2 + 11^2 = c^2$

$36 + 121 = c^2$

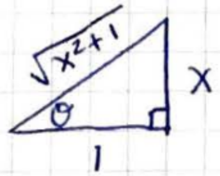
$157 = c^2$

$\sqrt{157} = c$

not really needed

$\cot\theta = \frac{a}{o} = \boxed{\frac{11}{6}}$

#47) $\sin\left(\arctan \frac{x}{1}\right)$




$1^2 + x^2 = c^2$

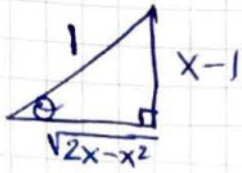
$1 + x^2 = c^2$

$\sqrt{1+x^2} = c$

$\sin\theta = \frac{o}{h} = \boxed{\frac{x}{\sqrt{x^2+1}}}$

SohcahToa

#49) $\sec[\arcsin(\frac{x-1}{1})]$




$(x-1)^2+b^2=1^2$

$x^2-2x+1+b^2=1$

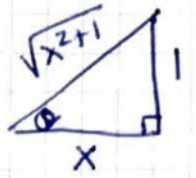
$b^2=2x-x^2$

$b=\sqrt{2x-x^2}$

$\sec\theta=\frac{h}{a}$

$=\frac{1}{\sqrt{2x-x^2}}=\boxed{\frac{\sqrt{2x-x^2}}{2x-x^2}}$

#51) $\cot(\arctan\frac{1}{x})$




$x^2+1^2=c^2$

$x^2+1=c^2$

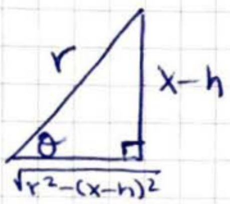
$\sqrt{x^2+1}=c$

not really need but good practice.

$\cot\theta=\frac{a}{o}$

$=\boxed{x}$

#53) $\cos(\arcsin\frac{x-h}{r})$




$(x-h)^2+b^2=r^2$

$b^2=r^2-(x-h)^2$

$b=\sqrt{r^2-(x-h)^2}$

$\cos\theta=\frac{a}{h}=\boxed{\frac{\sqrt{r^2-(x-h)^2}}{r}}$