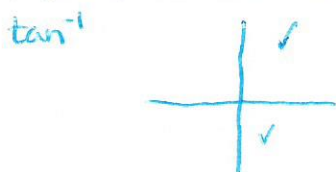


explanation. Not necessary; $\tan 90^\circ$, $\tan 270^\circ$'s undefined

4. (6 points) For what values of x is $\tan^{-1}(\tan x) = x$?



$\tan x$ D: $-\infty < x < \infty$ $x \neq n\pi + \frac{\pi}{2}$
 R: $-\infty < y < \infty$

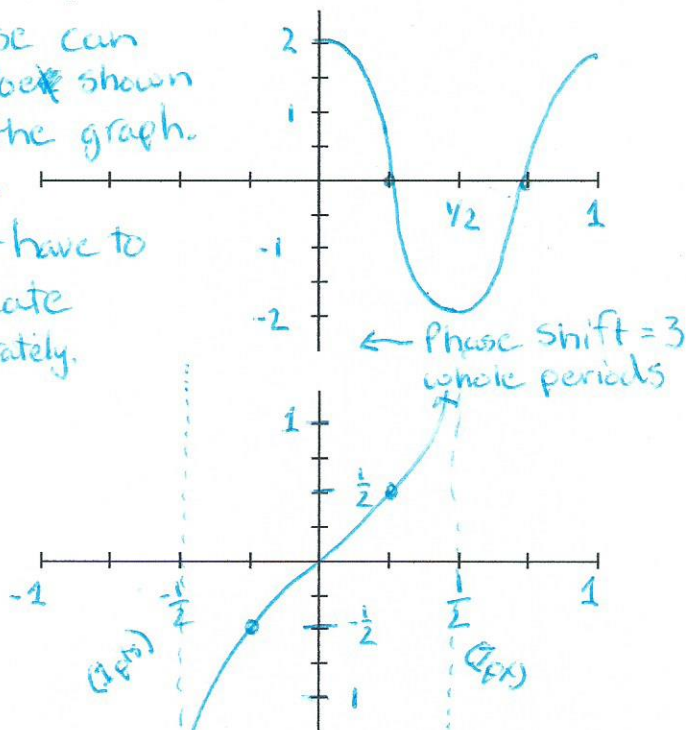
$\tan^{-1} x$ D: $-\infty < x < \infty$ $x \neq n\pi + \frac{\pi}{2}$
 R: $-90^\circ < y < 90^\circ$
 $-\frac{\pi}{2} < y < \frac{\pi}{2}$

$-\frac{\pi}{2} < x < \frac{\pi}{2}$
 or
 $(-90^\circ, 90^\circ)$
 (6pts)

5. (16 points) For each of the following functions, sketch one period of the graph carefully. Label the grid sufficiently to indicate the period, amplitude and asymptotes.

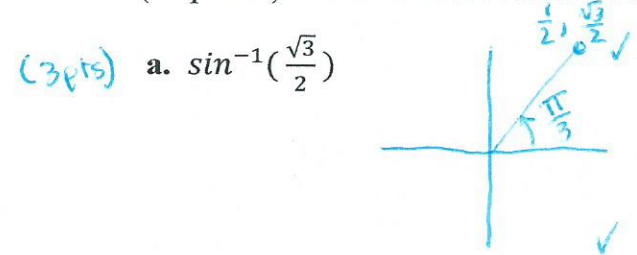
(8pts) a. $f(x) = 2\cos 2\pi(x+3)$ (2pts)
 amplitude = 2 (2pts)
 period = $\frac{2\pi}{k} = \frac{2\pi}{2\pi} = 1$ (2pts)
 P. shift Left 3 (invisible) (2pts)

← these can all be shown on the graph you don't have to indicate separately.

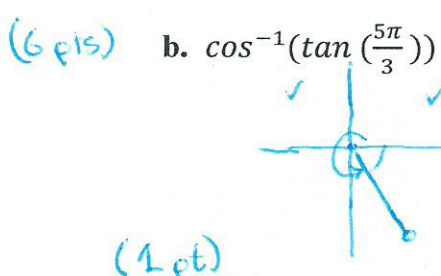


(8pts) b. $f(x) = \frac{1}{2}\tan(\pi x)$ (2pts)
 amp = $\frac{1}{2}$ (2pts)
 per = $\frac{\pi}{k} = \frac{\pi}{\pi} = 1$ (2pts)

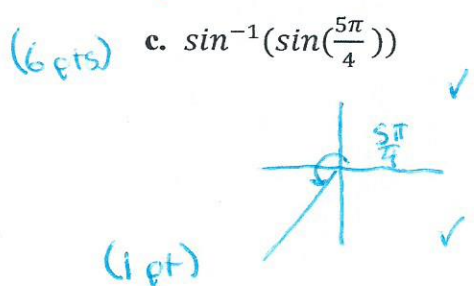
6. (16 points) Find the exact values of each of the following. Include a reference angle sketch.



\sin^{-1} defined (✓) (1pt)
 $\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$
 $\sin^{-1}(\frac{\sqrt{3}}{2}) = \frac{\pi}{3}$ (2pts)



$\tan \frac{5\pi}{3} = -\sqrt{3}$ (1pt)
 $\cos(-\sqrt{3}) = \text{undefined}$ (3pts)
 $(-\sqrt{3})$ not in the domain of \cos^{-1} (1pt)
 D: $[-1, 1]$ (1pt)



$\sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$ (1pt)
 $\sin^{-1}(-\frac{\sqrt{2}}{2}) = -\frac{\pi}{4}$ (3pts)
 \sin^{-1} not defined at $\frac{5\pi}{4}$ (1pt)