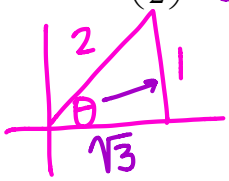
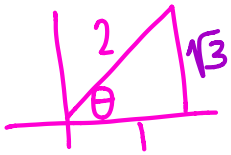
3.2 Principal Inverse Values Day 1 Name: KEY

Pg 557 #1-8. Find the exact value of each expression, if it is defined.

1. (a) $\sin^{-1}\left(\frac{1}{2}\right)$ 30° or $\frac{\pi}{6}$

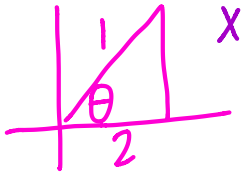


(b) $\cos^{-1}\left(\frac{1}{2}\right)$ 60° or $\frac{\pi}{3}$

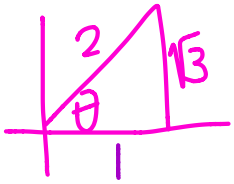


(c) $\cos^{-1}(2)$ $\boxed{\text{DNE}}$

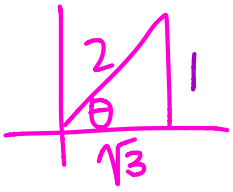
$x^2+2^2=1^2$



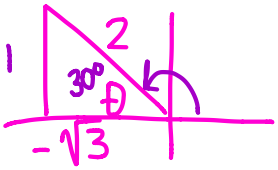
2. (a) $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$ 60° or $\frac{\pi}{3}$



(b) $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$ 30° or $\pi/6$

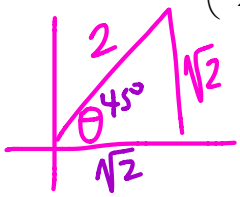


(c) $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$



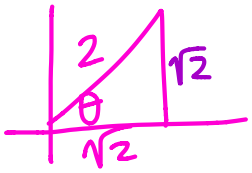
150° or $5\pi/6$

3. (a) $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$ 45° or $\pi/4$

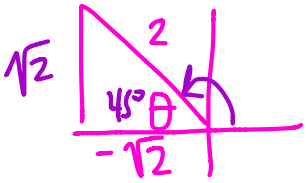


$x^2+(\sqrt{2})^2=2^2$

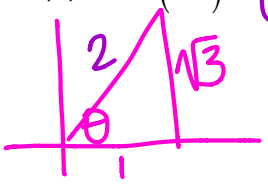
(b) $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$ 45° or $\frac{\pi}{4}$



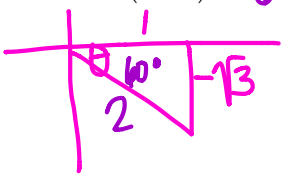
(c) $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ 135° or $\frac{3\pi}{4}$



4. (a) $\tan^{-1}\left(\sqrt{3}\right)$ 60° or $\frac{\pi}{3}$



(b) $\tan^{-1}\left(-\sqrt{3}\right)$ -60° or $-\frac{\pi}{3}$



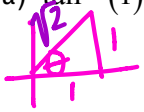
(c) $\sin^{-1}\left(\sqrt{3}\right)$ DNE

5. (a) $\sin^{-1}(1)$ 90° or $\pi/2$

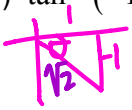
(b) $\cos^{-1}(1)$ 0

(c) $\cos^{-1}(-1)$ 180° or π

6. (a) $\tan^{-1}(1)$ 45° or $\frac{\pi}{4}$

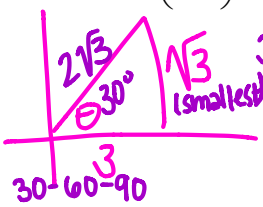


(b) $\tan^{-1}(-1)$ -45° or $-\pi/4$



(c) $\tan^{-1}(0)$ 0

7. (a) $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$ 30° or $\pi/6$



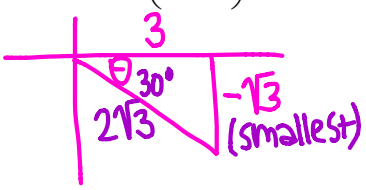
$3^2+(\sqrt{3})^2=c^2$

$9+3=c^2$

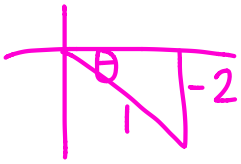
$\sqrt{12}=\sqrt{c^2}$

$2\sqrt{3}=c$

(b) $\tan^{-1}\left(-\frac{\sqrt{3}}{3}\right)$ -30° or $-\pi/6$



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



8. (a) $\sin^{-1}(0)$

0

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

90° or $\pi/2$

(c) $\cos^{-1}\left(-\frac{1}{2}\right)$ 120° or $2\pi/3$