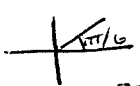
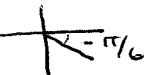
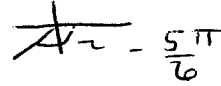
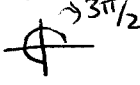
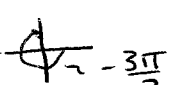
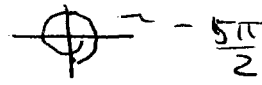
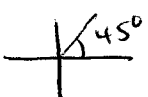
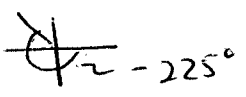


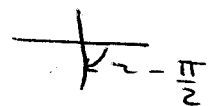
Section 6.2 Trigonometric Functions of Angles - Solutions

2. a) $\frac{\pi}{6}$  b) $-\frac{\pi}{6}$  c) $-\frac{5\pi}{6}$ 

4. a) $\frac{3\pi}{2}$  b) $-\frac{3\pi}{2}$  c) $-\frac{5\pi}{2}$ 

6. a) 45°  b) -225°  c) 315°

10. $\sin(-\frac{\pi}{2}) = -1$ $\cos(-\frac{\pi}{2}) = 0$ $\tan(-\frac{\pi}{2})$ undefined
 $\csc(-\frac{\pi}{2}) = -1$ $\sec(-\frac{\pi}{2})$ undefined $\cot(-\frac{\pi}{2}) = 0$

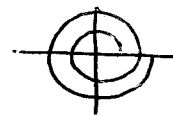


14. $\sin(-3\pi) = 0$ $\cos(-3\pi) = -1$ $\tan(-3\pi) = 0$
 $\csc(-3\pi)$ undefined $\sec(-3\pi) = -1$ $\cot(-3\pi)$ undefined.



15. $\sin 0 = 0$ $\cos 0 = 1$ $\tan 0 = 0$
 $\csc 0 = \text{undefined}$ $\sec 0 = 1$ $\cot 0 = \text{undefined}$.

16. $\sin 4\pi = 0$ $\cos 4\pi = 1$ $\tan 4\pi = 0$
 $\csc 4\pi = \text{undefined}$ $\sec 4\pi = 1$ $\cot 4\pi = \text{undef.}$



24. $(-\frac{5}{13})^2 + (-\frac{12}{13})^2 = \frac{25}{169} + \frac{144}{169} = \frac{169}{169} = 1$ $\sin \beta = -\frac{12}{13}$ $\cos \beta = -\frac{5}{13}$
 $\tan \beta = \frac{12}{5}$ $\csc \beta = -\frac{13}{12}$ $\sec \beta = -\frac{13}{5}$ $\cot \beta = \frac{5}{12}$

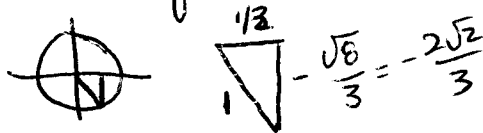
26. θ	$\cos \theta$	$\sin \theta$	$\tan \theta$	$\sec \theta$	$\csc \theta$	$\cot \theta$
0	1	0	0	1	undef.	undef.
$-\pi/2$	0	-1	undef.	undef.	-1	0
$-\pi$	-1	0	0	-1	undef.	undef.
$-3\pi/2$	0	1	undef.	undef.	1	0
-2π	1	0	0	1	undef.	undef.

28. a) $\sin 4$ is neg b) $\cos 4$ - neg $\tan 4$ - positive

32. $\sin 5 < \sin 4$ 34. $\cos 3 < \cos 4$

41. $\cos 4 \approx -0.6$ graph; calc. $\cos 4 \approx -0.65$ $\sin 4 \approx -0.8$ graph calc; $\sin 4 \approx -0.76$

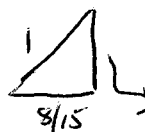
60. Pis quad 4 $x = \frac{1}{3} \Rightarrow \cos \theta = \frac{1}{3}$ $\sin \theta = -\frac{2\sqrt{2}}{3}$ $\tan \theta = -2\sqrt{2}$
 $\sec \theta = 3$ $\csc \theta = -\frac{3}{2\sqrt{2}}$ $\cot \theta = -\frac{1}{2\sqrt{2}}$



68. $x = -\frac{8}{15}$ and $\pi < \theta < \frac{3\pi}{2}$ (3rd quad)

$$\sin \theta = -\frac{\sqrt{161}}{15} \quad \cos \theta = -\frac{8}{15}$$

$$\csc \theta = -\frac{15}{\sqrt{161}} \quad \sec \theta = -\frac{15}{8}$$



$$\sqrt{1 - \left(\frac{8}{15}\right)^2} = \sqrt{1 - \frac{64}{225}} = \sqrt{\frac{161}{225}} = \frac{\sqrt{161}}{15}$$

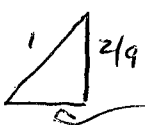
$$\tan \theta = \frac{-\sqrt{161}}{15} \cdot \frac{15}{8} = -\frac{\sqrt{161}}{8}$$

$$\cot \theta = \frac{8}{\sqrt{161}}$$

69. $y = -\frac{2}{9}$ $\frac{3\pi}{2} < \theta < 2\pi$ (4th quad)

$$\sin \theta = -\frac{2}{9} \quad \cos \theta = \frac{\sqrt{77}}{9} \quad \tan \theta = -\frac{2}{9} \cdot \frac{9}{\sqrt{77}} = -\frac{2}{\sqrt{77}}$$

$$\csc \theta = -\frac{9}{2} \quad \sec \theta = \frac{9}{\sqrt{77}} \quad \cot \theta = -\frac{\sqrt{77}}{2}$$



$$\sqrt{1 - \frac{4}{81}} = \frac{\sqrt{77}}{9}$$

70. $y = \frac{2}{9}$ $0 < \theta < \frac{\pi}{2}$ (1st quad) same triangle as in 69

$$\sin \theta = \frac{2}{9} \quad \cos \theta = \frac{\sqrt{77}}{9} \quad \tan \theta = \frac{2}{\sqrt{77}}$$

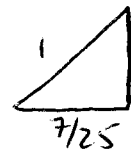
$$\csc \theta = \frac{9}{2} \quad \sec \theta = \frac{9}{\sqrt{77}} \quad \cot \theta = \frac{\sqrt{77}}{2}$$

72. $x = -\frac{7}{25}$ $180^\circ < \theta < 270^\circ$ (3rd quad)

$$\sin \theta = -\frac{24}{25} \quad \cos \theta = -\frac{7}{25}$$

$$\csc \theta = -\frac{25}{24} \quad \sec \theta = -\frac{25}{7}$$

$$\tan \theta = \frac{24}{7}$$



$$\cot \theta = \frac{7}{24}$$

$$\sqrt{1 - \frac{49}{625}} = \sqrt{\frac{576}{625}} = \frac{24}{25}$$

90. a)

$\cos \theta$
+
 $\sec \theta$

I

positive

II

neg

III

neg

IV

pos

$\sin \theta$
+
 $\csc \theta$

positive

pos.

neg

neg

$\tan \theta$
+
 $\cot \theta$

positive

neg

pos

neg.

b) of course it works!