

$(x, y) =$   
 $(\cos, \sin)$   
 $\tan = \frac{\sin}{\cos}$

Part I: Evaluate using the unit circle. Show work when appropriate on notebook paper. No decimals.

1.  $\cos 45^\circ = \frac{\sqrt{2}}{2}$
2.  $\sin 210^\circ = -\frac{1}{2}$
3.  $\cos 315^\circ = \frac{\sqrt{2}}{2}$
4.  $\tan 120^\circ = -\sqrt{3}$   
 $\frac{\sqrt{3}/2}{1/2} = \frac{\sqrt{3}}{2} \cdot 2 = \sqrt{3}$
5.  $\sin 90^\circ = 1$
6.  $\tan 225^\circ = 1$
7.  $\sin 150^\circ = \frac{1}{2}$
8.  $\cos 180^\circ = -1$
9.  $\tan 270^\circ = \frac{1}{0} = \text{und.}$
10.  $\cos 390^\circ = \frac{\sqrt{3}}{2}$   
 $\hookrightarrow \cos 30^\circ$
11.  $\sin 420^\circ = \frac{\sqrt{3}}{2}$   
 $\hookrightarrow \sin 60^\circ$
12.  $\csc 30^\circ = 2$   
 $\frac{1}{\sin 30^\circ} = \frac{1}{1/2} = 2$
13.  $\cos 540^\circ = -1$   
 $\hookrightarrow \cos 180^\circ$
14.  $\sec 315^\circ = \sqrt{2}$   
 $\frac{1}{\cos 315^\circ} = \frac{1}{\sqrt{2}/2} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$
15.  $\tan 60^\circ = \sqrt{3}$   
 $\frac{\sqrt{3}/2}{1/2} = \frac{\sqrt{3}}{2} \cdot 2 = \sqrt{3}$
16.  $\cot 30^\circ = \sqrt{3}$   
 $\frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \sqrt{3}$
17.  $\csc 0^\circ = \text{und.}$   
 $\frac{1}{\sin 0^\circ} = \frac{1}{0} = \text{und.}$
18.  $\sin -60^\circ = -\frac{\sqrt{3}}{2}$   
 $\sin 300^\circ$
19.  $\sec 135^\circ = -\sqrt{2}$   
 $\frac{1}{\cos 135^\circ} = \frac{1}{-1/\sqrt{2}} = -\sqrt{2}$
20.  $\cot -150^\circ = \frac{\sqrt{3}}{3}$   
 $\cot 210^\circ = \frac{-\sqrt{3}/2}{-2/1} = \frac{\sqrt{3}}{2} \cdot \frac{1}{2} = \frac{\sqrt{3}}{4}$
21.  $\csc 300^\circ = -\frac{2\sqrt{3}}{3}$   
 $\frac{1}{\sin 300^\circ} = \frac{1}{-2/\sqrt{3}} = -\frac{\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{\sqrt{3}} = -\frac{2\sqrt{3}}{2\sqrt{3}} = -\frac{\sqrt{3}}{\sqrt{3}} = -1$
22.  $\tan -60^\circ = -\sqrt{3}$   
 $\hookrightarrow \tan 300^\circ = \frac{-\sqrt{3}/2}{-2/1} = \frac{\sqrt{3}}{2} \cdot \frac{1}{2} = \frac{\sqrt{3}}{4}$
23.  $\sec -90^\circ = \text{und.}$   
 $\frac{1}{\cos 270^\circ} = \frac{1}{0} = \text{und.}$
24.  $\cos -120^\circ = -\frac{1}{2}$   
 $\hookrightarrow \cos 240^\circ$
25.  $\sin -45^\circ = -\frac{\sqrt{2}}{2}$   
 $\sin 315^\circ$
26.  $\cot 135^\circ = -1$
27.  $\csc 360^\circ = \text{und.}$   
 $\frac{1}{\sin 360^\circ} = \frac{1}{0} = \text{und.}$
28.  $\tan 480^\circ = -\sqrt{3}$   
 $\tan 120^\circ = \frac{\sqrt{3}/2}{-1/2} = -\sqrt{3}$
29.  $\sin 180^\circ = 0$
30.  $\sec -60^\circ = 2$   
 $\frac{1}{\cos 300^\circ} = \frac{1}{1/2} = 2$
31.  $\cos 720^\circ = 1$   
 $\cos 0^\circ$
32.  $\cot -210^\circ = -\frac{\sqrt{3}}{3}$   
 $\cot 150^\circ = \frac{-\sqrt{3}/2}{-2/1} = \frac{\sqrt{3}}{2} \cdot \frac{1}{2} = \frac{\sqrt{3}}{4}$
33.  $\tan 120^\circ = -\sqrt{3}$   
 $\frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \sqrt{3}$
34.  $\csc 150^\circ = 2$   
 $\frac{1}{\sin 150^\circ} = \frac{1}{1/2} = 2$
35.  $\tan -45^\circ = -1$   
 $\tan 315^\circ$
36.  $\sec 30^\circ = \frac{2\sqrt{3}}{3}$   
 $\frac{1}{\cos 30^\circ} = \frac{1}{\sqrt{3}/2} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$
37.  $\sin 300^\circ = -\frac{\sqrt{3}}{2}$
38.  $\cos 510^\circ = -\frac{\sqrt{3}}{2}$   
 $\cos 150^\circ$
39.  $\cot 90^\circ = 0$   
 $\frac{0}{1} = 0$
40.  $\tan 180^\circ = \frac{0}{-1} = 0$
41.  $\csc -30^\circ = -2$   
 $\frac{1}{\sin 330^\circ} = \frac{1}{-1/2} = -2$
42.  $\sin 270^\circ = -1$
43.  $\cos 225^\circ = -\frac{\sqrt{2}}{2}$
44.  $\sin 390^\circ = \frac{1}{2}$   
 $\sin 30^\circ = \frac{1}{2}$
45.  $\tan 120^\circ = -\sqrt{3}$   
 $\frac{\sqrt{3}}{2} \cdot \frac{2}{-1} = -\sqrt{3}$