

$$\theta = 40^\circ, 400^\circ, 760^\circ, 1120^\circ; 140^\circ, 500^\circ, 860^\circ, 1220^\circ$$

$$\text{and } \frac{1}{4}\theta = 10^\circ, 100^\circ, 190^\circ, 280^\circ; 35^\circ, 125^\circ, 215^\circ, 305^\circ$$

SUPPLEMENTARY PROBLEMS

6.12 Express each of the following in terms of functions of a positive acute angle.

- (a) $\sin 145^\circ$ (d) $\cot 155^\circ$ (g) $\sin(-200^\circ)$ (j) $\cot 610^\circ$
 (b) $\cos 215^\circ$ (e) $\sec 325^\circ$ (h) $\cos(-760^\circ)$ (k) $\sec 455^\circ$
 (c) $\tan 440^\circ$ (f) $\csc 190^\circ$ (i) $\tan(-1385^\circ)$ (l) $\csc 825^\circ$

- Ans.* (a) $\sin 35^\circ$ (g) $\sin 20^\circ$
 (b) $-\cos 35^\circ$ (h) $\cos 40^\circ$
 (c) $\tan 80^\circ$ (i) $\tan 55^\circ$
 (d) $-\cot 25^\circ$ (j) $\cot 70^\circ$
 (e) $\sec 35^\circ$ (k) $-\sec 85^\circ$
 (f) $-\csc 10^\circ$ (l) $\csc 75^\circ$

6.13 Find the exact values of the sine, cosine, and tangent of

- (a) 150° , (b) 225° , (c) 300° , (d) -120° , (e) -210° , (f) -315°

- Ans.* (a) $1/2, -\sqrt{3}/2, -1/\sqrt{3} = -\sqrt{3}/3$ (d) $-\sqrt{3}/2, -1/2, \sqrt{3}$
 (b) $-\sqrt{2}/2, -\sqrt{2}/2, 1$ (e) $1/2, -\sqrt{3}/2, -1/\sqrt{3} = -\sqrt{3}/3$
 (c) $-\sqrt{3}/2, 1/2, -\sqrt{3}$ (f) $\sqrt{2}/2, \sqrt{2}/2, 1$

6.14 Use the appropriate tables to verify that the function has the value stated.

- (a) $\sin 155^\circ 13' = 0.4192$ (f) $\tan 129.48^\circ = -1.2140$
 (b) $\cos 104^\circ 38' = -0.2526$ (g) $\sin 110.32^\circ = 0.9378$
 (c) $\tan 305^\circ 24' = -1.4071$ (h) $\cos 262.35^\circ = -0.1332$
 (d) $\sin 114^\circ 18' = 0.9114$ (i) $\tan 211.84^\circ = 0.6210$
 (e) $\cos 166^\circ 51' = -0.9738$ (j) $\cos 314.92^\circ = 0.7061$

6.15 Find all angles, $0^\circ \leq \theta < 360^\circ$, for which:

- (a) $\sin \theta = \sqrt{2}/2$, (b) $\cos \theta = -1$, (c) $\sin \theta = -0.6180$, (d) $\cos \theta = 0.5125$, (e) $\tan \theta = -1.5301$

- Ans.* (a) $45^\circ, 135^\circ$ (d) $59^\circ 10', 300^\circ 50'$ or $59.17^\circ, 300.83^\circ$
 (b) 180° (e) $123^\circ 10', 303^\circ 10'$ or $123.17^\circ, 303.17^\circ$
 (c) $218^\circ 10', 321^\circ 50'$ or $218.17^\circ, 321.83^\circ$