

1. a. $\sin \theta = -\frac{15}{17}$, $\cos \theta = -\frac{8}{17}$, $\tan \theta = \frac{15}{8}$, $\cot \theta = \frac{8}{15}$, $\sec \theta = -\frac{17}{8}$, $\csc \theta = -\frac{17}{15}$
 b. $\sin \theta = \frac{6\sqrt{85}}{85}$, $\cos \theta = -\frac{7\sqrt{85}}{85}$, $\tan \theta = -\frac{6}{7}$, $\cot \theta = -\frac{7}{6}$, $\sec \theta = -\frac{\sqrt{85}}{7}$, $\csc \theta = \frac{\sqrt{85}}{6}$
 c. $\sin \theta = -\frac{7\sqrt{2}}{10}$, $\cos \theta = -\frac{\sqrt{2}}{10}$, $\tan \theta = 7$, $\cot \theta = \frac{1}{7}$, $\sec \theta = -5\sqrt{2}$, $\csc \theta = -\frac{5\sqrt{2}}{7}$
2. a. -1 b. 2 c. $-5\sqrt{2}$ d. 2.75 e. $\frac{5\sqrt{3}-9\sqrt{2}}{3}$ f. $-2\sqrt{3}$
3. a. $\theta = 3^\circ$ b. $\theta = 2^\circ$ c. $\theta = 12^\circ$ d. $\theta = 12^\circ$
4. a. Impossible b. Possible c. Possible
5. a. $\csc \theta = \frac{\sqrt{5}}{2}$ b. $\tan \theta = -.57402$ c. $\sin \theta = -\frac{\sqrt{15}}{4}$
6. a. $x = 5\sqrt{3}$, $y = 5$, $z = \frac{10\sqrt{3}}{3}$, $v = \frac{5\sqrt{3}}{3}$ b. $x = 15$, $y = 15\sqrt{2}$, $z = 5\sqrt{6}$, $v = 10\sqrt{6}$
7. a. -0.9422 b. -1.30541 c. -0.3582 d. -1.0900 e. -2.3906 f. -0.1640
8. a. 79.9° b. 24.41° c. 77.35° d. 3.01° e. 5.63° f. 3.58°
9. a. $A = 19.35^\circ$, $a = 43.90$ in, $c = 132.5$ in
 b. $B = 37^\circ$, $a = 271$ cm, $b = 205$ cm
 c. $A = 70.2^\circ$, $B = 19.8^\circ$, $a = 609$ m
10. $\theta = 67.1^\circ$
11. a. $36^\circ 44' 10''$ b. 56.679° c. $112^\circ 5' 6''$ d. 212.824°
12. a. 75° b. 69° c. 213°
13. 3360° in two seconds
14. $25,200^\circ$ in five seconds
15. 430 meters
16. 5,856 meters
17. 2.01 miles
18. 2.47 km
19. $h = 198$ m