1. [10 pts.] The degree measures of two supplementary angles are expressed as $6x - 4$ and $8x - 12$. Find the measures.

2. [10 pts.] Convert $34° \, 51' \, 35''$ to decimal degrees, rounding to the nearest thousandth if necessary.

3. [10 pts.] Convert $-84.7138°$ to degree-minute-second format, rounding to the nearest second.

4. [10 pts.] The measures of two angles of a triangle are $19° \, 34' \, 23''$ and $41° \, 5' \, 11''$. Find the measure of the third angle.

5. [15 pts.] The point $(-24, -7)$ lies on the terminal side of angle θ. Find the values of the six trigonometric functions for θ.

6. [10 pts.] Find $\cot \theta$, given that $\csc \theta = -2$ and θ is in quadrant III.

7. [15 pts.] Given $\cos \theta = \frac{\sqrt{5}}{8}$ and $\tan \theta < 0$, find the values of the six trigonometric functions for θ.

8. [10 pts.] Find one solution to the equation $\cot(5\theta + 2°) = \tan(2\theta + 4°)$, assuming all angles involved are acute angles.

9. [10 pts.] Find the exact value of the unknown quantities in the figure.
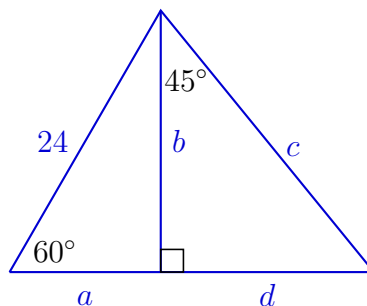
10. [10 pts.] Find all values of θ in the interval $[0°, 360°)$ for which $\sin \theta = -\frac{\sqrt{3}}{2}$.

11. [10 pts.] Find a value of θ in the interval $[0°, 90°)$ for which $\sec \theta = 1.1606249$. Write the answer in decimal degrees to six decimal places.

12. [10 pts.] Solve the right triangle for which $B = 51.7°$, $C = 90°$, and $a = 28.1$ m.

13. [10 pts.] The angle of depression from the top of a building to a point on the ground is $32° \, 30'$. How far is the point on the ground from the top of the building if the building is 252 m high?

14. [10 pts.] Two ships leave a port at the same time. The first ship sails on a bearing of $52°$ at 17 km/hr and the second on a bearing of $322°$ at 22 km/hr. How far apart are they after 2.5 hr?