Name:_____

MA 1323 Section 01 *Practice Exam 1* *November 19, 2019*

Follow the instructions for each question and show enough of your work so that I can follow your thought process. If I can't read your work, answer or there is no justification to a solution, you will receive little or no credit!

1. Perform the following conversions:

(a) $35^\circ\ 30'$ to decimal degrees

(b) 46.75° to degrees, minutes, seconds

2. Perform the following conversions:

(a) $20^\circ\ 54'\ 36''$ to decimal degrees

(b) 31.4296° to degrees, minutes, seconds

3. If the point $(5, 12)$ is on the terminal side of an angle θ in standard position, find the values of the six trigonometric functions of θ.

4. If the point $(15, -8)$ is on the terminal side of an angle θ in standard position, find the values of the six trigonometric functions of θ.

5. Given that $\sin\theta = \dfrac{\sqrt{5}}{7}$, and θ is in QII, find the five remaining values of the six trigonometric functions of θ.

6. Given that $\sec\theta = -4$, and $\sin\theta > 0$, find the five remaining values of the six trigonometric functions of θ.

7. Find the exact value of each variable in the figure:

8. Find the exact value of each variable in the figure:

9. Given the equation $\tan(\alpha) = \cot(\alpha + 10^\circ)$, find all solutions in the interval $[0, 360^\circ)$.

10. Given the equation $\cos\theta = \sin(2\theta - 30^\circ)$, find all solutions in the interval $[0, 360^\circ)$.

11. Two ships leave a port at the same time. The first ship sails on a bearing of 32° at 16 knots (nautical miles per hour) and the second on a bearing of 122° at 24 knots. How far apart are they after 2.5 hours?

12. A ship leaves port and sails on a bearing of N 47° E for 3.5 hours. It then turns and sails on a bearing of S 43° E for 4 hours. If the ship's rate is 22 knots, find the distance that the ship is from port.

13. Compute h as indicated in the figure: