Review Test 3
Math 1113

Name
Id
Section

Read each problem carefully. Show all your work. Credits will be given mainly depending on your work, not just an answer. Avoid simple mistakes! Put a box around the final answer to a question. Use the back of the page if necessary.

(1) Solve the system by the substitution method.
a)

$$\begin{cases} x + y = -8 \\ x - 2y = 20 \end{cases}$$

b)

$$\begin{cases} 3x - y = 9 \\ -9x + 3y = 18 \end{cases}$$

(2) Solve the system by the elimination (addition) method.
a)

$$\begin{cases} 3x - 5y = -12 \\ 6x + 8y = 0 \end{cases}$$

b)

$$\begin{cases} \frac{x}{2} + \frac{y}{3} = 4 \\ \frac{x}{4} + \frac{y}{6} = 2 \end{cases}$$

c)

$$\begin{cases} -2x + 3y = 7 \\ 4x - 6y = -14 \end{cases}$$

(3) Solve the linear system in three variables. Show all steps and describe in your own words what you are doing at each step.
a)

$$\begin{cases} 2x + 3y + 4z = 5 \\ 3x - 2y + 5z = 2 \\ x + 4y - 2z = 1 \end{cases}$$

b)

$$\begin{cases} x - 2y - 4 = -5z \\ 3x - z = 4y \\ 5 - 2z = x \end{cases}$$

c)

$$\begin{cases} x + 3y + 5z = 2 \\ 3x - y \quad\quad = 1 \\ 2x + y + 8z = 6 \end{cases}$$

(4) Solve the triangle $\triangle ABC$. State the case and the Law first.
- $a = 12, b = 5, C = 90°$.
- $a = 9, b = 2, B = 15°$.
- $a = 21, B = 18°, A = 72°$.

(5) A plane leaves city A and flies straight north for 300 miles. The pilot then flies at a bearing of $N30°W$ for 200 miles to city B. What is the distance between city A and city B?

(6) a) State the law of sine and law of cosine.
b) Solve the triangle in the figure.
c) Find the area of the trapezoid. (Hint: Heron' formula for area of $\triangle ABC = \sqrt{s(s-a)(s-b)(s-c)}$, where s equals one-half of the perimeter $(a+b+c)/2$)