Hon Pre-Calc Quiz 7.1 – 7.4 2016 – *2017*

Use Calculator only if the problem can't be solved algebraically. Write all general solutions in terms of Z. Circle all final answers!! No work = No credit!!

1. Solve the following system: $\begin{cases} x^2 + y^2 = 289 \\ x^2 - 2y = 34 \end{cases}$

2. Solve the following system for u and v:

$$\begin{cases} u\cos 2x + v\sin 2x = 0 \\ u(-2\sin 2x) + v(2\cos 2x) = \csc 2x \end{cases}$$

3. Solve the following system:

$$\begin{cases} 2x + y - z = 7 \\ x - 2y + 2z = -9 \\ 3x - y + z = 5 \end{cases}$$

4. Solve the following system:

$$\begin{cases} 3x - 5y + 5z = 1 \\ 5x - 2y + 3z = 0 \\ 7x - y + 3z = 0 \end{cases}$$

5. Solve the following system:

$$\begin{cases} x + 2z = 5 \\ 3x - y - z = 1 \\ 6x - y + 5z = 16 \end{cases}$$

6. Find the equation of the parabola: $y = ax^2 + bx + c$ that passes through (-3,-3), (1,1) and (-1,-9)

7. A mixture of 12 liters of chemical A, 16 liters of chemical B, and 26 liters of chemical C is required to kill Nandini, a destructive crop insect. Commercial spray X contains 1, 2, and 3 parts respectively, of these chemicals. Commercial spray Y contains only chemical C. Commercial spray Z contains only chemicals A and B in equal amounts. How much of each type of commercial spray is needed to get the desired mixture?

8. A chemist needs 10 liters of a 25% acid solution. The solution is to be mixed from three solutions whose concentrations are 10%, 20%, and 50%. How many liters of each solution will be used if the chemist wishes to use the least amount of the 50% solution as possible?

9. An airplane flying into a headwind travels the 990-mile flying distance between Rochester Hills, Michigan and Atlanta, Georgia in 3 hours and 40 minutes. On the return flight, the distance is traveled in 3 hours.

a) Find the airspeed of the plane.

b) Find the wind speed.

10. Write the partial fraction decomposition of the rational expression:

$$\frac{3}{x^4 + x}$$

11. Write the partial fraction decomposition of the rational expression:

$$\frac{x + 6}{x^3 - 3x^2 - 4x + 12}$$

12. Write the partial fraction decomposition of the improper rational expression:

$$\frac{16x^4}{(2x - 1)^3}$$