Math35 Midterm 1 Review

1. Solving for $x$.
   a) $2 - 3(x + 4) + 2x = 7x - 10$
   b) $\frac{4x - 1}{2} + 3 = \frac{x + 2}{3}$
   c) $\frac{2}{3}(x - 1) + 4x + 3 = x - 7$

2. Given $3x + 2y = -4$ Graph it using a t-table of at least 3 values, using the intercepts (cover method), and using the slope intercept method. You should notice that all three of these method will yield the same graph!

3. Find the equation of line if the line goes through the given points:
   a) $(1, -3)$ and $(3, 5)$
   b) $(2, 0)$ and $(0, 3)$
   c) $(2, 3)$ and $x \text{-int} = 2$

4. Find an equation of a line that goes through $(2, \frac{1}{2})$ and is parallel to the line $y = \frac{3}{2}x - 6$.

5. Find an equation of a line that goes through $(1, -3)$ and is perpendicular to a line that goes through the points $(-2, -4)$ and $(3, 4)$.

6. Find an equation of a line that passes through $(-3, 4)$ that is perpendicular to the line $x = 3$.

7. Graph the following function using a t-table of at least three values and state the domain and range.
   a) $y = 2|x - 1| - 3$
   b) $y = -3(x - 2)^2 - 1$
   c) $y = x^3 - 3$

8. Find the domain of the given functions.
   a) $f(x) = \frac{4}{x - 3}$
   b) $g(x) = \frac{3}{(x - 2)(x + 7)}$
   c) $h(x) = \frac{2}{(2x + 5)(x - 1)}$

9. Solve the system of equations algebraically using any method
   a) $2x - 5y = -12$
   b) $5x + 7y = 2$
   c) $x + 2y + z = -2$
   $-x + 4y = 9$
   $3x - 2y = 9$
   $-x + y - 3z = -8$
   $3y + 4z = 8$

10. How much of a $40\%$ antifreeze solution must a mechanic mix with an $80\%$ antifreeze solution of 20 gallons of $50\%$ antifreeze solution is needed?

11. The points $(0, 0)$, $(3, 3)$, and $(6, 0)$ lie on the circle $x^2 + y^2 + Cx + Dy + E = 0$ where $C$, $D$, and $E$ are unknown. Use the given points and a system of equations to find the equation of the circle. That is, find $C$, $D$, and $E$. 