**Math 51 Ch. 8 Review** **Name:** _____

***Double check your solutions! Use Algebraic Notation AND Show All of Your Work. You may <u>not</u> leave to use the restroom. You may use a calculator, but not any scratch paper. Students are not allowed to share calculators!***

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1. Solve $\begin{cases} y - 3x = -1 \\ y - 3x = 2 \end{cases}$ ***by graphing***. No credit will be given for any other method. If there is no solution or an infinite number of solutions, so state. Use set-builder notation to express infinite solution sets.

2. Solve $\begin{cases} 2x - 5y = 1 \\ 3x + y = -7 \end{cases}$ using the ***Substitution Method***.

   No credit will be given for any other method. Show all your work for full credit. If there is no solution or an infinite number of solutions, so state. Use set-builder notation to express infinite solution sets.

3. Solve $\begin{cases} 3x - 7y = 13 \\ 6x + 5y = 7 \end{cases}$ using the ***Elimination Method***.

   No credit will be given for any other method. Show all your work for full credit. If there is no solution or an infinite number of solutions, so state. Use set-builder notation to express infinite solution sets.

4. Solve $\begin{cases} 5x - 2y = 8 \\ 3x - 5y = 1 \end{cases}$ using the ***Elimination Method***.

   No credit will be given for any other method. Show all your work for full credit. If there is no solution or an infinite number of solutions, so state. Use set-builder notation to express infinite solution sets.

5. Solve $\begin{cases} 12x + 3y = 15 \\ \frac{4}{5}x + \frac{1}{5}y = 1 \end{cases}$ using ***any method***.

   Show all your work for full credit. If there is no solution or an infinite number of solutions, so state. Use set-builder notation to express infinite solution sets.

6. Solve $\begin{cases} 6x + 3y = 15 \\ x + \frac{1}{2}y = \frac{7}{2} \end{cases}$ using ***any method***.

   Show all your work for full credit. If there is no solution or an infinite number of solutions, so state. Use set-builder notation to express infinite solution sets.

7. Be able to solve two or three problems like those in the Section 8.3 worksheet.

8. Find the equilibrium point for the demand and supply functions $D(p) = 108 - 11p$ and $S(p) = 70 + 8p$.

9. Bob's Basic Solar Company produces solar panels. This year, his projected fixed costs will be \$77,000. The cost for producing each solar panel is \$140. The revenue from selling a single panel is \$250.

   ***Find each of the following:***

   (a) The total cost $C(x)$ of producing $x$ solar panels.

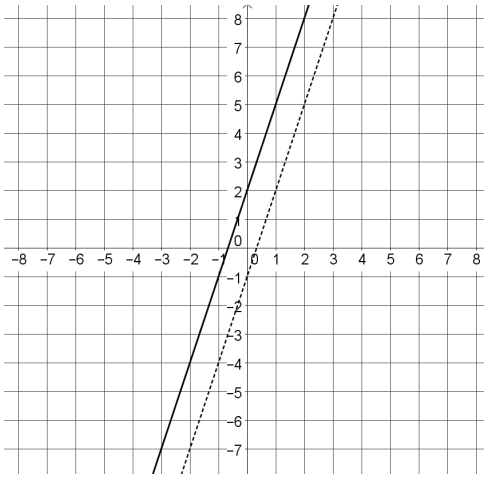
   (b) The total revenue $R(x)$ from the sale of $x$ solar panels.

   (c) The total profit $P(x)$ from the production and sale of $x$ panels

   (d) The profit or loss from production and sale of 500 solar panels; of 850 solar panels

   (e) The break-even point

***Answers:*** 1)



2. $(x, y) = (-2, -1)$
3. $(x, y) = (2, -1)$
4. $(x, y) = (2, 1)$
5. $\left\{ (x, y) \mid \quad 12x + 3y = 15 \right\}$
6. $\emptyset$ or $\left\{ \quad \right\}$ or "no solution"
7. see the section 8.3 worksheet
8. $(price, quantity) = (\$2, 86\ units)$
9. Let $x$ represent the number of solar panels manufactured and sold.

   **a** $C(x) = 77000 + 140x$

   **b** $R(x) = 250x$

   **c** $P(x) = 110x - 77000$

   **d** $P(500) = -\$22,000$; $P(850) = \$16,500$

   **e** $P(x) = 0$ when $x = 700$ solar panels.