

Name _____

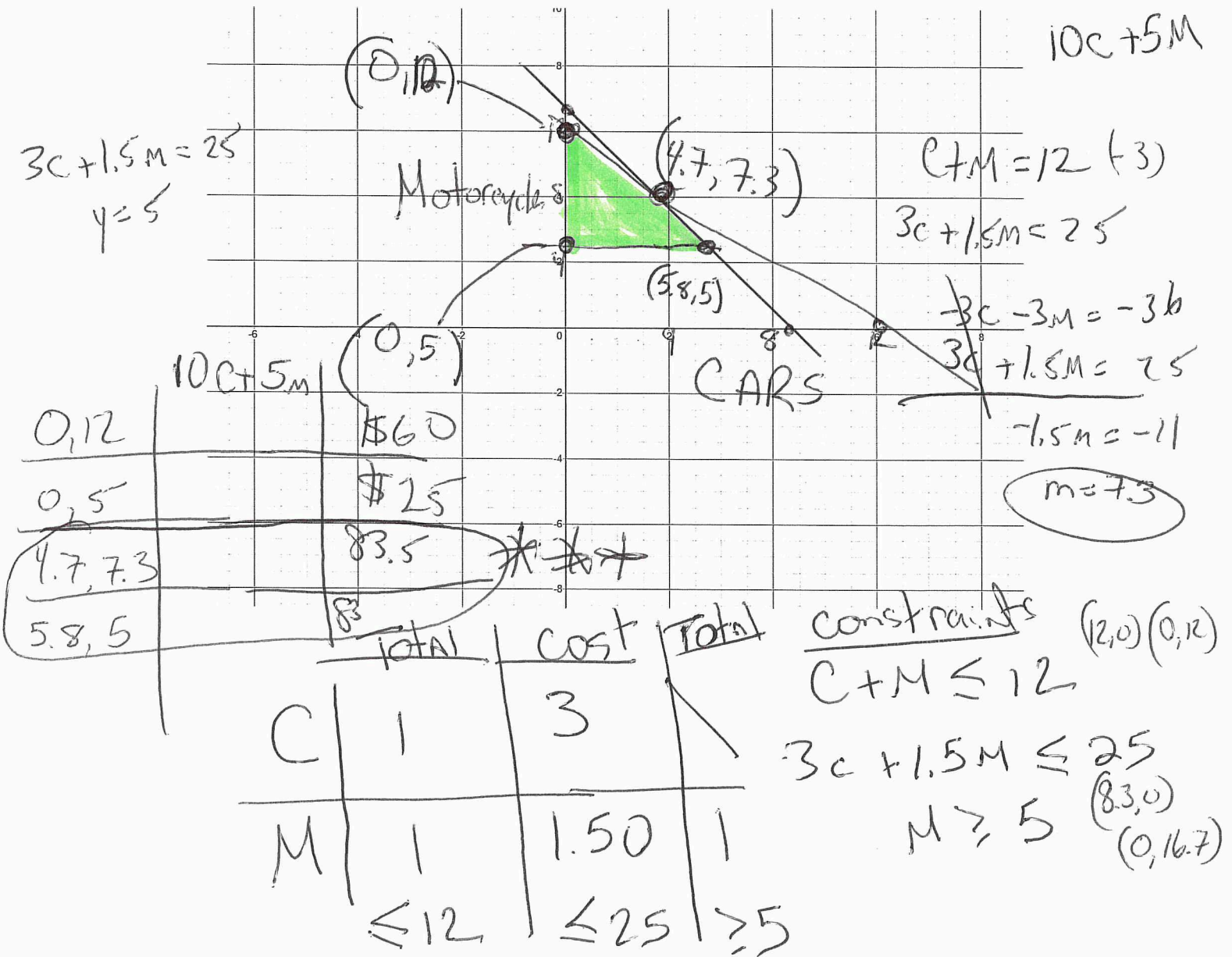
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Advanced Algebra

Unit 6: Advanced Systems of Equations- Assignment #6

Linear Programming Problem:

- 1) John washes cars and motorcycles. He can wash no more than 12 vehicles all together. He has to wash at least 5 motorcycles. It costs him \$3.00 per car to do the wash and \$1.50 per motorcycle to do the wash. He can spend at most \$25 for various reasons. He makes a profit of \$10.00 on a car and \$5 on a motorcycle. How many of each should he wash to maximize his profit?



Example Problem: Solve $3|x + 2| + 1 = 13$

$3 x + 2 = 12$	Subtract the 1 from both sides
$ x + 2 = 4$	Divide the 3
$x + 2 = 4$ and $x + 2 = -4$	Dropped the Absolute Value Sign and made 2 equations
$x = 2$ and $x = -6$	Solved the equations

1) $|x| = 8$

-8 or 8

2) $|x + 6| = 9$

$x + 6 = 9$ $x + 6 = -9$
 $x = 3$ $x = -15$

3) $|x - 3| = 8$

$x - 3 = 8$ $x - 3 = -8$
 $x = 11$ $x = -5$

4) $|x + 9| = 12$

$x + 9 = 12$ $x + 9 = -12$
 $x = 3$ $x = -21$

5) $|x - 1| = -4$

$x - 1 = -4$ \emptyset
 NO solution

6) $|4x| = 24$

$x = 6$ $x = -6$

7) $\left|\frac{x}{3}\right| = 6$

$\frac{x}{3} = 6$ $\frac{x}{3} = -6$
 18 or -18

8) $|2x + 1| = 25$

$2x + 1 = 25$ $2x + 1 = -25$
 $x = 12$ $x = -13$

9) $2|x| = 80$

$|x| = 40$
 40 and -40

10) $|3x + 1| = 10$

$3x + 1 = 10$ $3x + 1 = -10$
 3 -3.7

11) $|x + 5| + 1 = 11$

$x + 5 = 10$ $x + 5 = -10$
 $x = 5$ $x = -15$

12) $2|x| - 10 = 100$

$|x| = 55$
 $x = 55$ and -55

13) $2|x| - 2 = 1.8$

$x = 10$ $x = -10$

14) $|x + 9| - 5 = -5$

$x = -9$

15) $|x - .5| + 2 = 15$

$x - .5 = 13$ $x - .5 = -13$
 13.5 -12.5

16) $\left|\frac{x}{4} + 2\right| = 7$

17) $|3x + .1| = 6$

18) $|3 - 2x| = 8$

19) $4|x - 2| = 8$

20) $|2x - 7| + 8 = 5$