MODELING WITH SYSTEMS OF INEQUALITIES
HOMEWORK

[handwritten: 35   C   75   ω]

1. Jody is working two jobs, one as a carpenter and one as a website designer. He can work at most 50 hours per week and makes $35 per hour as a carpenters and $75 an hour as a website designer. He wants to make at least $2350 per week but also wants to work at least 10 hours per week as a carpenter. Let c represent the hours he works as a carpenter and let w represent the hours he works as a website designer.
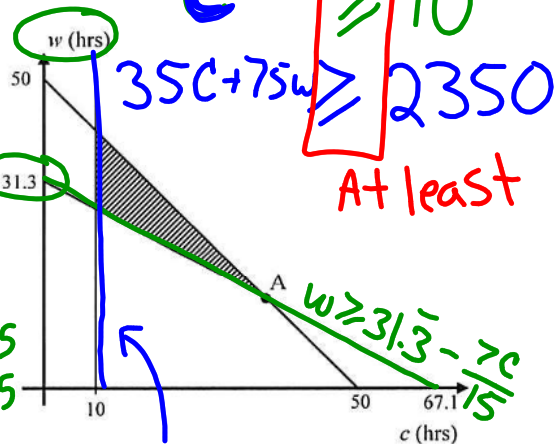
(a) Write a system of inequalities that models this scenario.

[handwritten: W = Website hours   C = Carpenter hours]

[handwritten: at most]

$$C + W \leq 50$$

$$C \geq 10$$

$$35C + 75w \geq 2350$$

[handwritten: At least]

(b) The graph of the system is shown below with its solutions shown shaded. Three lines are graphed. Label each with its equation.

[handwritten:]
$$35C + 75W \geq 2350$$
$$-35C \qquad\qquad -35C$$
$$\overline{75W \geq 2350 - 35C}$$

(c) Find the coordinates of point A by solving a system of equations by Elimination.

[handwritten:]
$$\frac{75w}{75} \geq \frac{2350 - 35c}{75} \div 5$$
$$w \geq 31.\overline{3} - \frac{7c}{15}$$

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NORMAL FLOAT AUTO REAL RADIAN MP
rref([A])
                              [1 0 35]
                              [0 1 15]
■
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[handwritten: c = 35   w = 15]

[handwritten on graph: w (hrs), 50, 31.3, A, w ≥ 31.3̄ - 7c/15, 10, 50, 67.1, c (hrs)]

[handwritten: c = 35]

[handwritten: c ≥ 10]

35 Solve the following system of inequalities graphically on the grid below and label the solution S.

$$3x + 4y > 20$$
$$-3x \qquad -3x$$
$$\frac{4y}{4} > \frac{-3x}{4} + \frac{20}{4}$$
$$y > -\frac{3}{4}x + 5$$

$$3x + 4y > 20$$
$$x < 3y - 18$$

$$x < 3y - 18$$
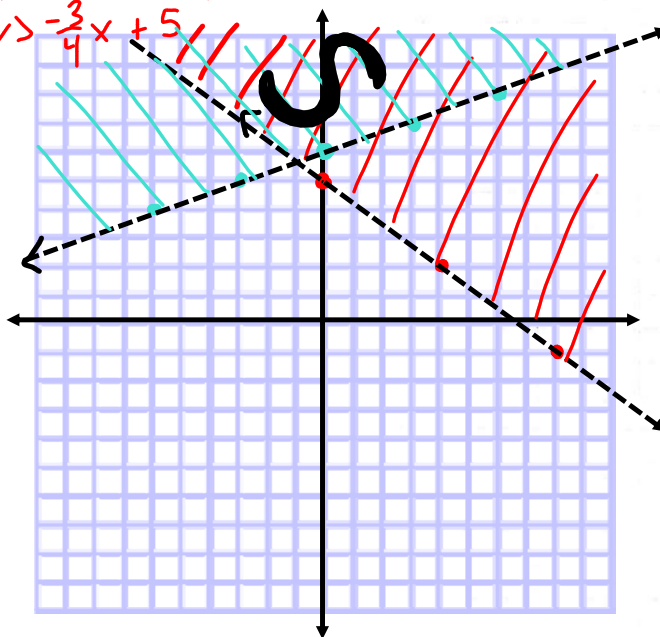
Is the point (3,7) in the solution set? Explain your answer.