

Q2 Review Sheet 2

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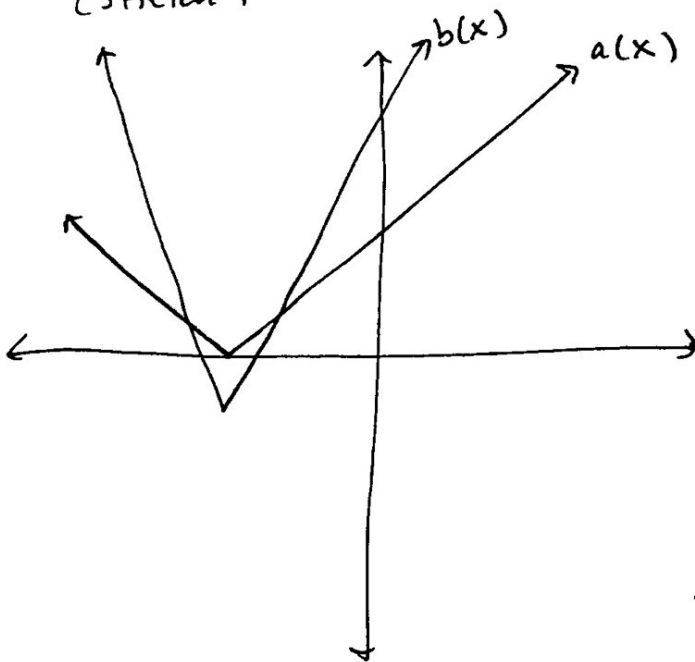
$h(x)$ is similar in shape to $b(x)$, except $b(x)$ is translated 2 units to the right and 3 units down to form $h(x)$. This is shown in the annotated notation below:

$$h(x) = b(x-2) - 3$$

\uparrow \uparrow
 Right 2 Down 3

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(Sketch)



I. True. Min of $b(x) = -1$
 Min of $a(x) = 0$

II. True. Max is infinity.

III. False.

$b(x) < a(x)$ only when $-b < x < -4$

IV. False.

$a(x) = b(x)$ when $x = -4$ and $x = -b$

V. True. $-\infty < x < \infty$

VI. False.

Range of $a(x) : 0 \leq y < \infty$

Range of $b(x) : -1 \leq y < \infty$

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3) Ave Rate of Changes

$$\text{First to Second Hour : } \frac{110-40}{2-1} = 70$$

$$\text{Second to Fourth Hour : } \frac{180-110}{4-2} = 35 \quad (1)$$

$$\text{Sixth to Eighth Hour : } \frac{350-230}{8-6} = 60$$

$$\text{Eighth to tenth Hour : } \frac{390-350}{10-8} = 20$$

4) $y \leq 0$

5) Original

$$4x + 2y = 22$$

$$-2x + 2y = -8$$

Answer

$$8x + 4y = 44$$

$$-8x + 8y = -8$$

$\times 4$

$\times 1$

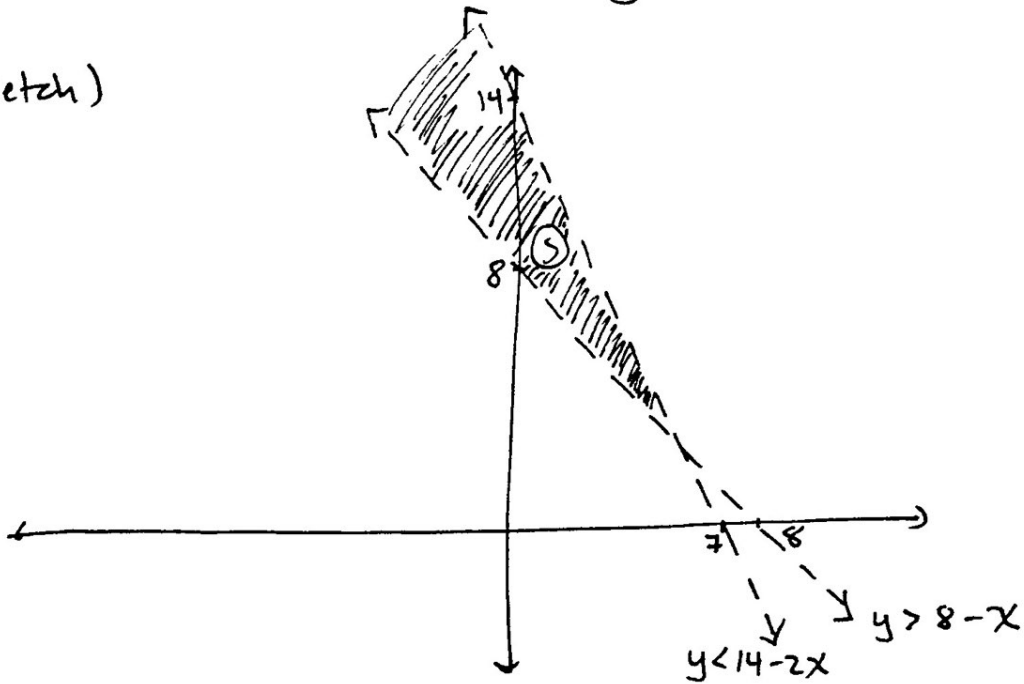
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$$\begin{aligned} \textcircled{1} \quad & x + y > 8 \\ & y > 8 - x \end{aligned}$$

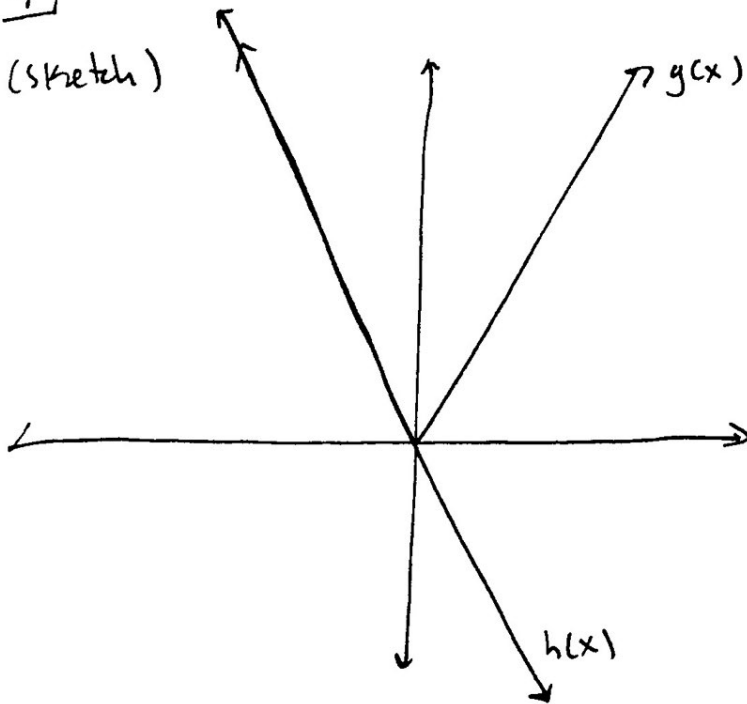
$$\begin{aligned} \textcircled{2} \quad & 2x + y < 14 \\ & y < 14 - 2x \end{aligned}$$

(sketch)



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(sketch)



Solutions

$$-\infty < x \leq 0$$

These are the x -values where the graphs of $g(x)$ and $h(x)$ intersect.

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$$y = 2x + 8$$

$$3(-2x + y) = 12$$

so...

$$3(-2x + 2x + 8) = 12$$

$$3(8) = 12$$

$$24 = 12$$

Because this is not true, the system of equations has no solutions.