Review #5 over Ch 10

Work all the problems on a separate piece of paper showing all steps.

Solve and graph the following. Write your answers in interval notation:

1) $-3x + 5 \geq 2x - 9$

2) $6(3x - 9) - 2(4x + 3) > 6 - x$

3) $-3 \leq 5x + 2 < 7$

4) $-3x + 2 > -7$ or $5 - 4x \leq 1$

5) $5x + 3 > 13$ or $4(x + 3) \leq -4$

6) $7 - 3x > 10$ and $2x + 5 \geq 7$

Write the domain of the following in interval notation:

7) $f(x) = \sqrt{9-4x}$

8) $g(x) = \frac{3x-8}{2x^2+7x-15}$

Solve the following:

9) $|3x + 2| - 3 = 5x$

10) $3|6 - 3x| - 18 = -12$

11) $|0.6x - 0.3| + 6 = 4$

12) $\left|\frac{2}{3}x - 3\right| = \left|\frac{2}{3}x + 15\right|$

Solve the following. Write your answers in interval notation:

13) $|7 - 3x| > 5$

14) $\left|\frac{2}{3}x - 15\right| \leq 3$

15) $|9x - 3| \geq 12$

16) $|-6.5x + 13| < 39$

17) $|9 + 2x| < -3$

18) $|4 - 7x| \geq -2$

Set-up the following as an inequality and solve:

19) The normal operating temperature for a certain computer is between 60˚ F and 85˚ F inclusively. a) Write an inequality representing the normal operating temperatures for this computer. b) Write an inequality representing the abnormal operating temperatures for this computer.

20) A two-inch screw will be rejected if its length varies by more than ± 0.003 in. a) Write an inequality that represents this situation. b) Solve the inequality and interpret what the solution means.

Sketch the graph of the following (be sure to label the axes):

21) $3x + 2y < 6$

22) $y \geq -\frac{3}{5}x + 5$

23) $x \leq 3y$

24) $y = -4x$

25) $y > -3$

26) $x \leq 2$

27) $3x - 2y \geq 5$

28) $x - 5y = 0$

29) $3x - y > 1$

30) $y < \frac{4}{3}x + 1$

Solve the following systems by graphing. Label all vertices:

31) $3x - 2y < 6$
$y < \frac{1}{2}x - 1$

32) $y - 3x \geq 4$
$2x - y < -3$

33) $2x + 3y > -9$
$3x + 4.5y \leq 18$

34) $3x + 4y \geq 12$
$x - y \geq -2$
$1 \leq x \leq 3$

Solve the following inequalities:

35) $x^3 - 2x^2 - 9x + 18 > 0$

36) $\frac{x}{x-2} \leq 2$

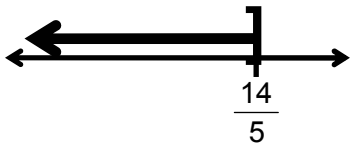
37) $x^5 < 8x^2$

38) $(x - 3)(2x + 5) \geq (-2x + 3)x$

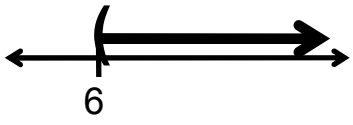
39) $-\frac{6x^2-7x-3}{x^2-9} \geq 0$

40) $\frac{6x^3-17x^2+16}{x^4-6x^3+9x^2} > -1$

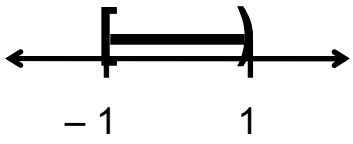
Answers:

1) Graph: 

Interval Notation: $(-\infty, \frac{14}{5}]$

2) Graph: 

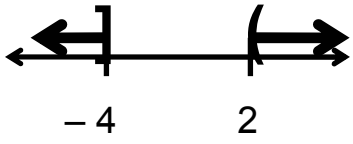
Interval Notation: $(6, \infty)$

3) Graph: 

Interval Notation: $[-1, 1)$

4) Graph: 

Interval Notation: $(-\infty, \infty)$

5) Graph: 

Interval Notation: $(-\infty, -4] \cup (2, \infty)$

6) Graph: 

Interval Notation: $\varnothing$

7) $(-\infty, 2.25]$ 8) $(-\infty, -5) \cup (-5, 1.5) \cup (1.5, \infty)$

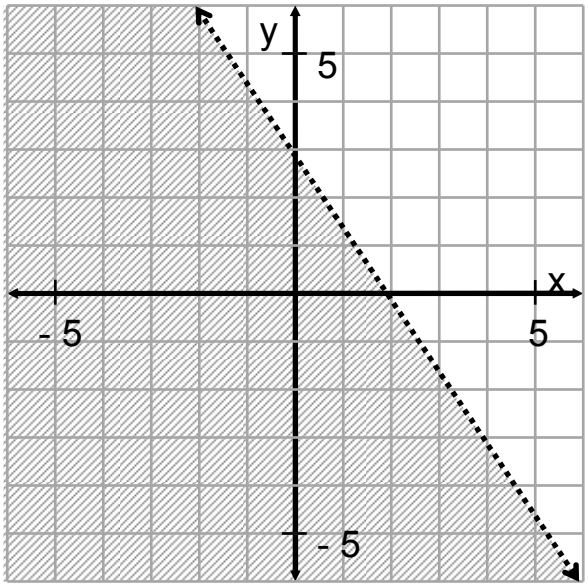
9) The solution is $-\frac{1}{2}$. 10) The solutions are $\frac{4}{3}$ and $\frac{8}{3}$.

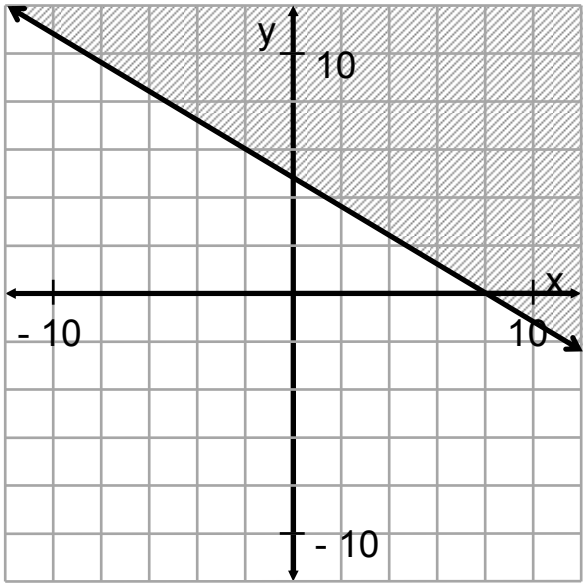
11) There is no solution. 12) The solution is – 9. 13) $(-\infty, \frac{2}{3}) \cup (4, \infty)$

14) $[18, 27]$ 15) $(-\infty, -1] \cup [\frac{5}{3}, \infty)$ 16) $(-4, 8)$ 17) $\varnothing$

18) $(-\infty, \infty)$ 19a) $60^\circ \le F \le 85^\circ$ 19b) $F < 60^\circ$ or $F > 85^\circ$

20) $|L - 2| > 0.003$; the screw will be rejected if the length is less than 1.997 inches or more than 2.003 inches.

21) 

22) 

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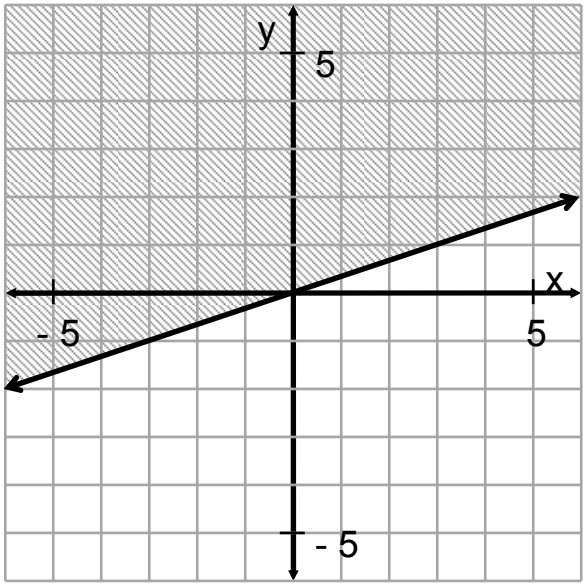

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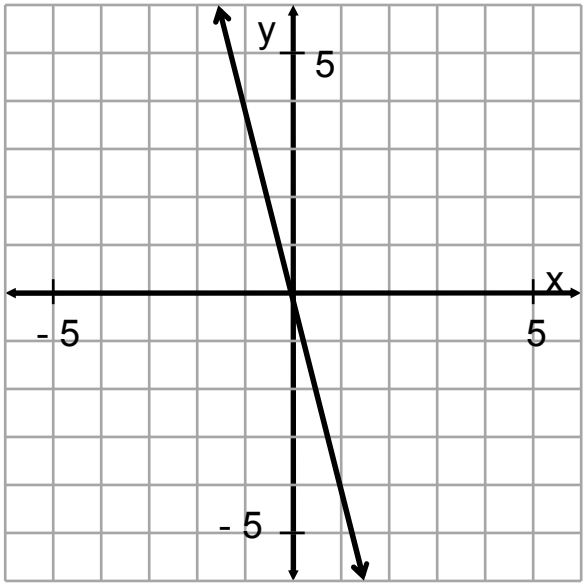

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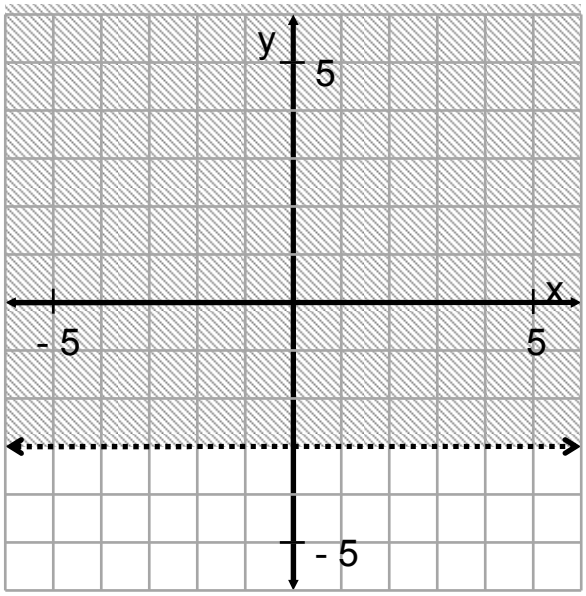

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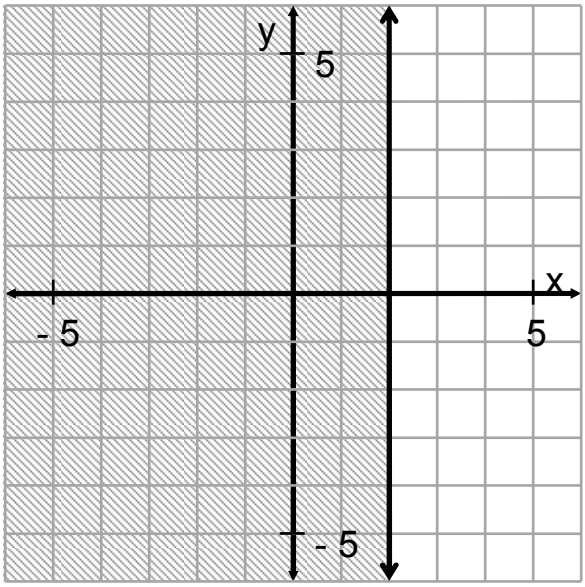

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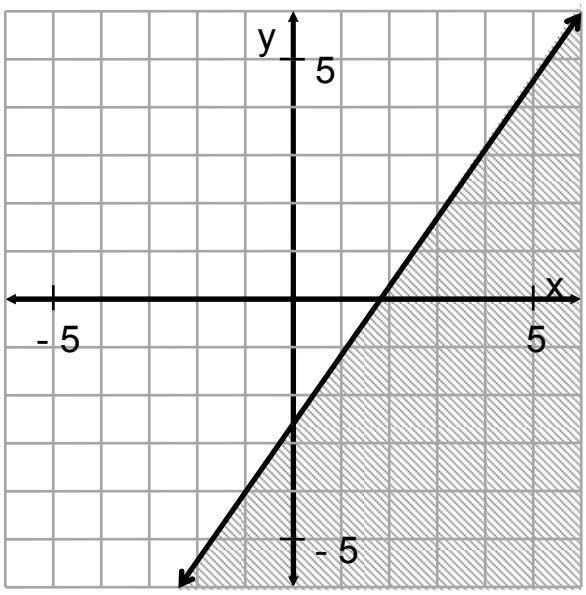

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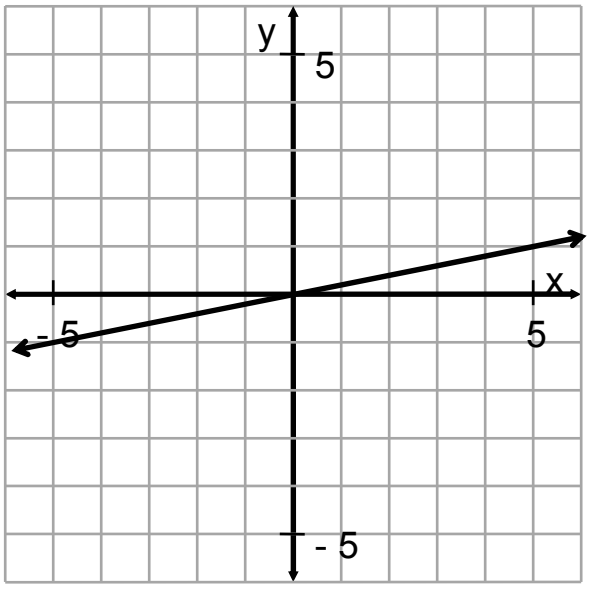

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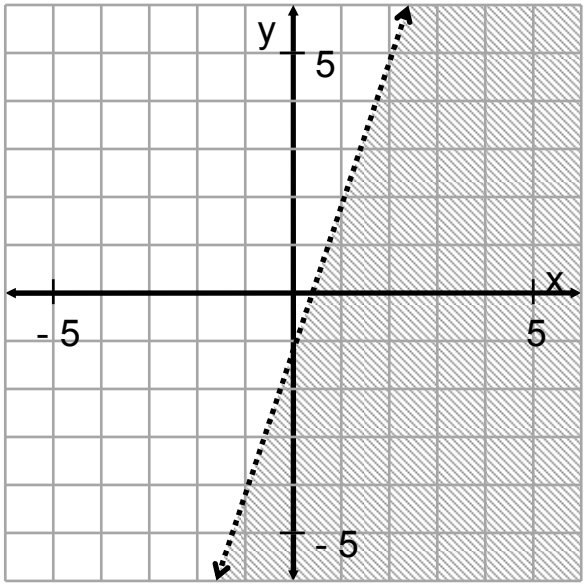

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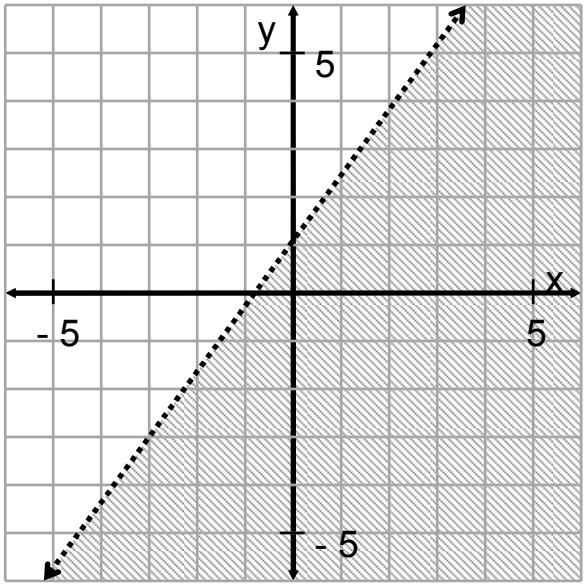

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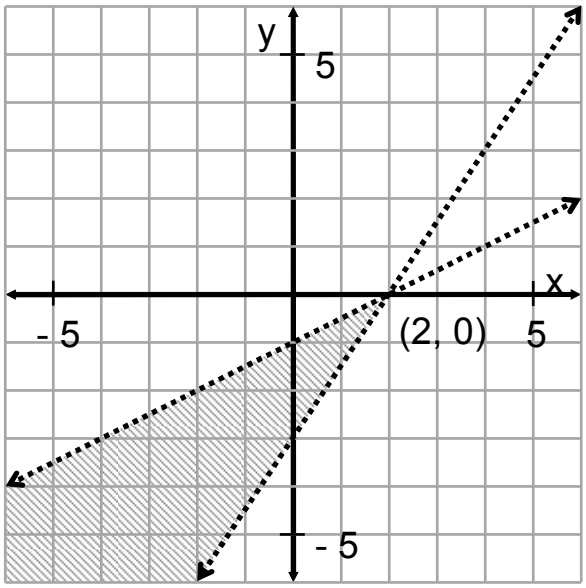

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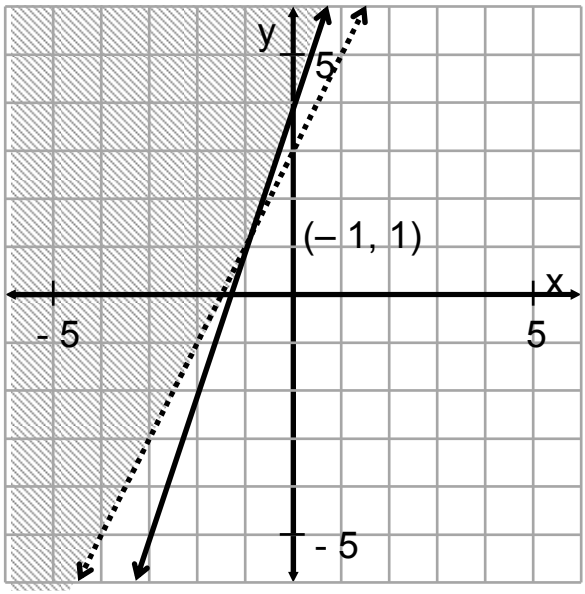

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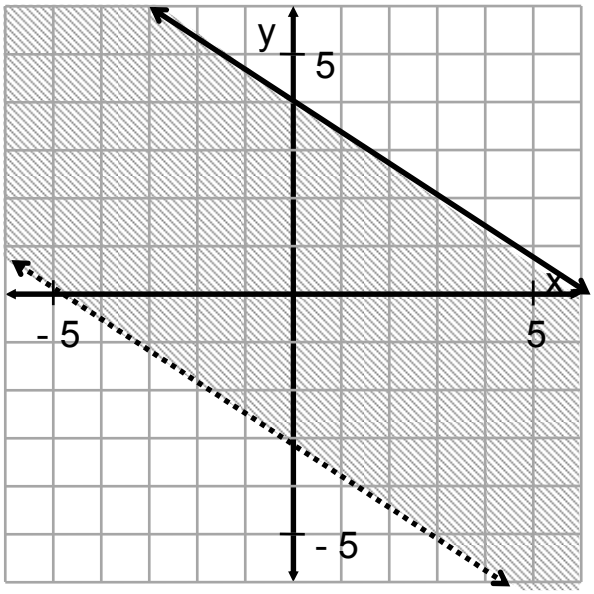

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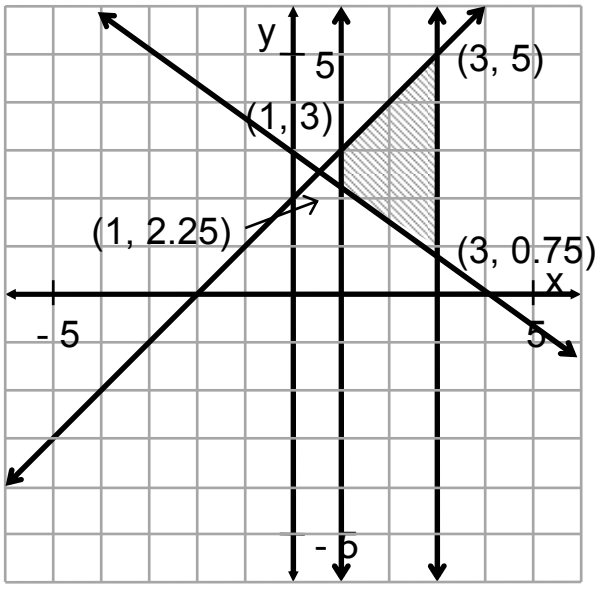

35) $(-3, 2) \cup (3, \infty)$ 36) $(-\infty, 2) \cup [4, \infty)$ 37) $(-\infty, 0) \cup (0, 2)$

38) $(-\infty, -1.5] \cup [2.5, \infty)$ 39) $(-3, -\frac{1}{3}] \cup [1.5, 3)$

40) $(-\infty, -2) \cup (-2, 0) \cup (0, 2) \cup (2, 3) \cup (3, \infty)$