## Math 105 - Homework 7

Solve all of the following without using a calculator.

1. 
$$6 - x \ge 0$$

2. 
$$-2u + 5 \le 7$$

3. 
$$7x + 5 > 12x - 6$$

4. 
$$x^2 - 5x > 0$$

5. 
$$x^2 + x - 20 > 0$$

6. 
$$9 - x^2 \le 0$$

7. 
$$x^2 - 3x \le -2$$

8. 
$$\frac{1}{x} > \frac{2}{5}$$
 Hint: notice that  $x = 0$  is a bad point.

9. 
$$(x+1)(x+2)(x+3) > 0$$

10. 
$$7 \le 2x - 3 \le 15$$

11. 
$$\frac{x(x+5)(x-7)}{(x-2)^2} > 0$$

$$12. \ \frac{r}{4-r} \le 1$$

Rewrite the following sentences as inequality formulas using absolute values. You do not need to solve the inequalities.

- 13. The distance from x to 5 is less than 2.
- 14. The distance from y to -2 is at least  $\epsilon$ , but strictly less than  $2\epsilon$ .

Find all solutions to the following equations and inequalities.

15. 
$$|x-7|=3$$

16. 
$$|y-3| < 4$$

17. 
$$|3 - 2x| = 7$$

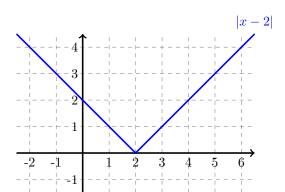
18. 
$$|2x-3| < 4$$

19. 
$$|3-z| \ge 2$$

20. 
$$1 \le |2x + 5| \le 5$$

Use the graphs below to solve the following inequalities without any algebra.

21. 
$$|x-2| \le 3$$



22. 
$$3 + 2x - x^2 > x + 1$$

