Homework 4 - Math 140

Solve the following equations.

1. $3x^{-4} = 48$.

2. $(x^{-1} + 5)^{-2} = \frac{1}{4}$.

3. $\sqrt{x + 25} = x + 5$.

4. $2^x = 8^{\sqrt{x}}$.

Suppose that $p(x) = x^2 - 8x + 12$.

5. What are the roots of $p(x)$?

6. What are the coordinates of the vertex of $p(x)$?

Solve the following inequalities.

7. $4x + 3 > 10x - 6$

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

9. $x^2 + 12x + 20 > 0$

10. $\frac{1}{x} > \frac{2}{5}$

11. $(x + 5)(x - 5)(x - 10) > 0$

12. $\frac{(x + 1)(x - 5)}{(x - 2)^2} > 0$

13. $\dfrac{x^2 - 4x + 3}{x - 2} \le 0$

14. $\dfrac{x}{4 - x} \le 1$

15. $|x - 4| \le 3$

16. $|2x + 5| > 3$

17. Write the following sentence as an inequality using absolute values: *the distance from x to 5 is less than 2.*