

Homework 5 - Math 140

Solve the following inequalities.

1. $4x + 3 > 10x - 6$

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

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

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

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

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

7. $\frac{x^2 - 4x + 3}{x - 2} \leq 0$

8. $\frac{x}{4 - x} \leq 1$

9. For each of the following sequences, determine if it is growing linearly or exponentially. If it is growing linearly, then find the growth rate, and if it is growing exponentially then find the growth factor.

(a) 18, 24, 32, $\frac{128}{3}$, ...

(b) 60, 90, 120, 150, ...

10. A hot cup of coffee that is 90°C is placed outside on a day when it is 0°C . According to Newton's law of cooling, the coffee will cool at an exponential rate. Find an equation for the temperature of the coffee T as a function of time t in hours, if the coffee is 6°C degrees after one hour.