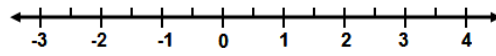
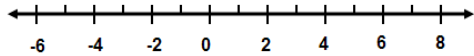


## SOLVING POLYNOMIAL INEQUALITIES – PART II

### Linear Inequalities

a) Solve  $2x \leq -8$

b) Solve  $-3x + 3 < 0$



### Solving Polynomial Inequalities

Solve  $(x-3)(2x+1)(x+2) > 0$

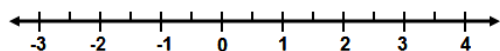
#### Using Intervals

- Determine the factors of the polynomial. These become the *intervals* of the function for the purposes of the inequality.

- Choose a test value in each interval to substitute into each factor of the polynomial function. The product of the three factors that produce \_\_\_\_\_ results will satisfy the inequality.

Interval					
Test Value					
Factors	$(x-3)$				
	$(2x+1)$				
	$(x+2)$				
	$(x-3)(2x+1)(x+2)$				

- Write a concluding statement to represent the solution to the inequality. The solution can also be represented on a number line.



## PRACTICE

1. Solve each inequality. Show each solution on a number line.

- a.  $x - 4 \leq 9$
- b.  $2x + 1 \leq 13$
- c.  $-5x + 3 > 18$
- d.  $3x + 2 \geq 2x - 9$
- e.  $4(x + 2) < 3 - x$
- f.  $1 - 4x \geq 8x$

2. Solve using intervals.

- a.  $4 - 3x - x^2 \geq 0$
- b.  $x^3 + x^2 - 20x \leq 0$
- c.  $x^4 - 2x^3 + x - 2 > 0$
- d.  $x^3 - x^2 \geq 2x + 12$

3. Solve. Describe the differences that you see in the solutions.

- a.  $x^3 - 3x - 2 \geq 0$
- b.  $x^3 - 3x - 2 \geq -2$
- c.  $x^3 - 3x - 2 \geq -10$