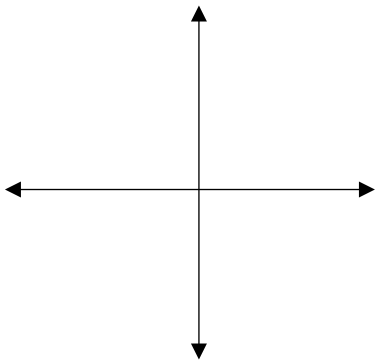
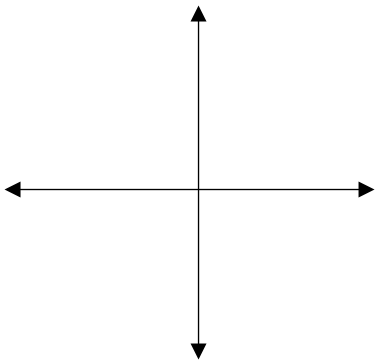
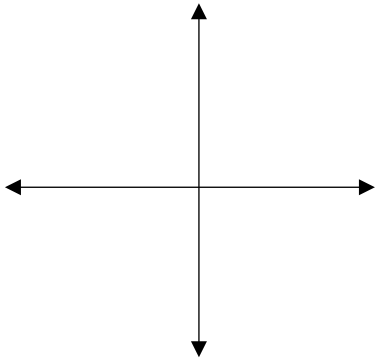
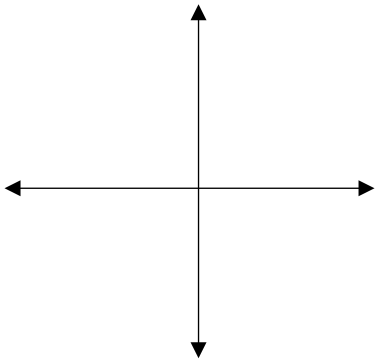
7.3 Polynomial Behavior Sketching Polynomials (Without a Calculator)

1. End Behavior – The graph's behavior as x approaches ±∞.

	Positive Leading Coefficient	**Negative Leading Coefficient**
Odd degree	Think of _____  As x→∞, y→_____ As x→-∞, y→_____	Think of _____  As x→∞, y→_____ As x→-∞, y→_____
Even Degree	Think of _____  As x→∞, y→_____ As x→-∞, y→_____	Think of _____  As x→∞, y→_____ As x→-∞, y→_____

2. Y-Intercept – Plug in _____ for _____.

   - Easiest to find in _____.

3. X-Intercepts – POLYNOMIAL NEEDS TO BE IN _____.

   - Set each _____ equal to _____.

4. Multiplicity (behavior at each x-intercept) – depends on the _____ of the factor.

Multiplicity		
1	Even	Odd

Example

$$y = x(x-3)^3(x-2)^4(x+7)$$

End Behavior:

Y-intercept

X-intercept

Function	Highest Powered Term	Zeros	Graph
$2(x+1)^2(x-3)(x+5)$			