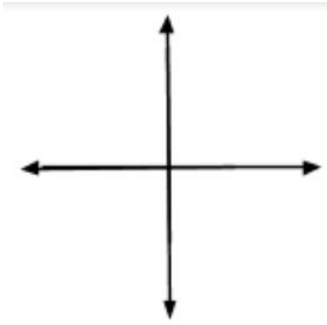
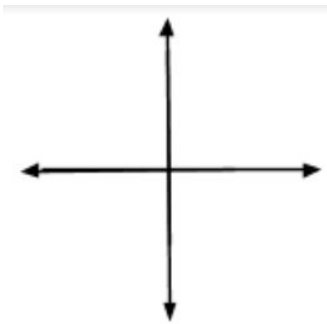
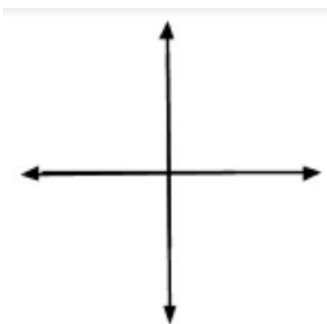
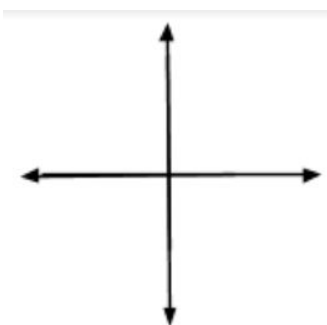
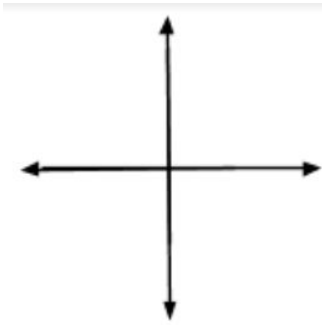
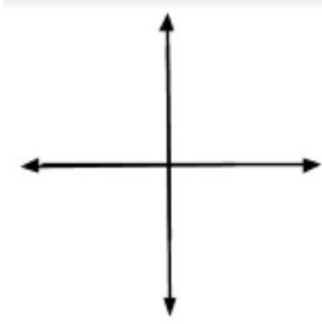
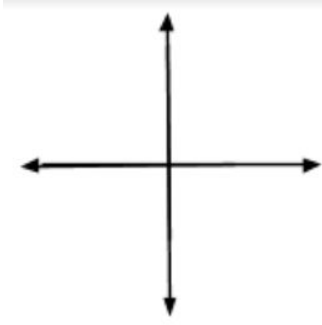
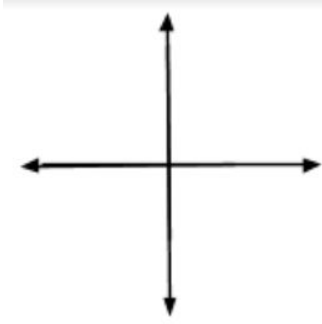
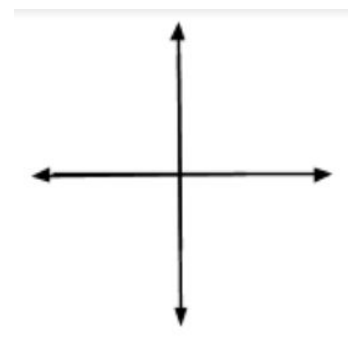
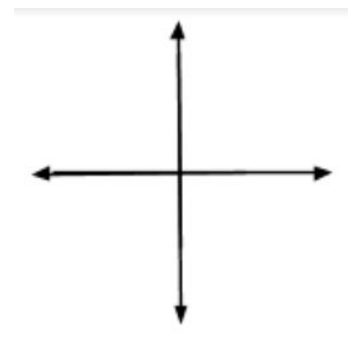
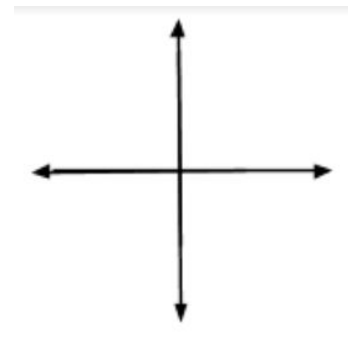
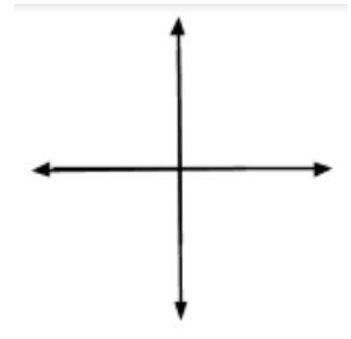


### 4.1.1 How can I describe the graph?

#1 Complete the table below			
Equation	Sketch	Degree/Intercepts	End Behavior
$f(x) = (x - 2)(x - 5)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.
$f(x) = -(x - 2)(x - 5)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.
$f(x) = (x + 4)(x + 1)(x - 3)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.
$f(x) = -(x + 4)(x + 1)(x - 3)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.

**#1 Continued**

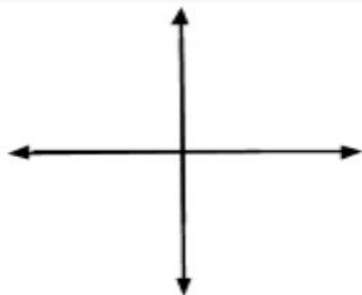
Equation	Sketch	Degree/Intercepts	End Behavior
$f(x) = (x + 2)^2(x - 3)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____. As the x-values decrease the y-values _____.
$f(x) = -(x + 2)^2(x - 3)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____. As the x-values decrease the y-values _____.
$f(x) = (x + 3)(x - 1)^3$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____. As the x-values decrease the y-values _____.
$f(x) = -(x + 3)(x - 1)^3$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____. As the x-values decrease the y-values _____.

<b>#1 Continued</b>			
<b>Equation</b>	<b>Sketch</b>	<b>Degree/Intercepts</b>	<b>End Behavior</b>
$f(x) = (x + 2)^4(x - 1)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.
$f(x) = -(x + 2)^4(x - 1)$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.
$f(x) = (x + 3)(x - 1)^5$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.
$f(x) = -(x + 3)(x - 1)^5$		Degree: y-intercept: x-intercepts:	As the x-values increase the y-values _____.  As the x-values decrease the y-values _____.

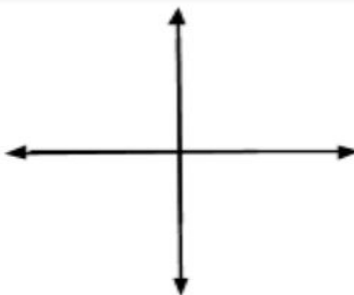
**#1 Continued:** Compare your equations and graphs. What connections can you make between the equation of the polynomial and its graph?

**#2** Sketch each of the polynomial functions below without a graphing calculator. Do not scale your axes, but be sure to label the important points.

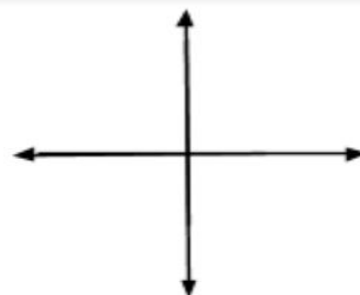
a.  $P(x) = (x + 7)(x - 9)$



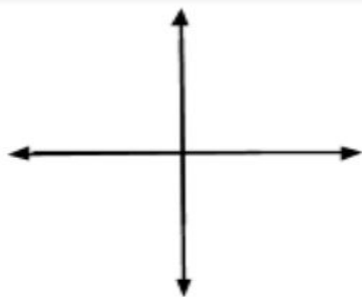
b.  $Q(x) = (x + 6)(x + 3)(x - 5)$



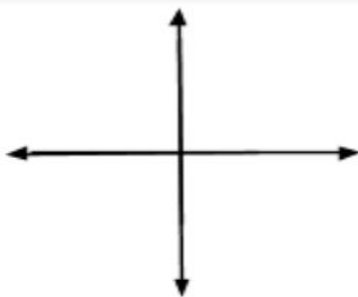
c.  $R(x) = (x + 7)^2(x - 5)$



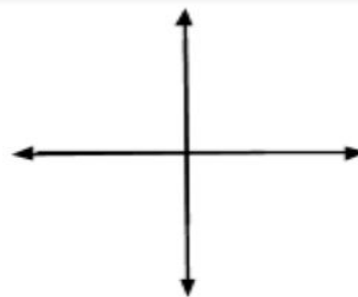
d.  $S(x) = -(x - 4)^2(x + 8)^2(x - 2)$



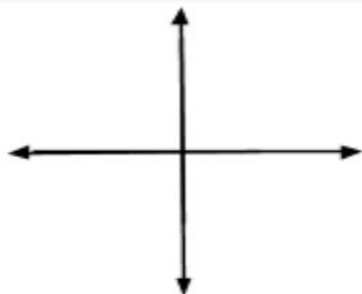
e.  $T(x) = (x + 4)^3(x - 1)$



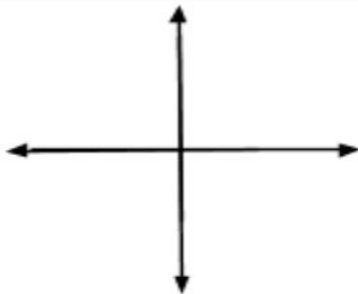
f.  $V(x) = -(x + 1)^2(x - 3)^2$



g.  $U(x) = (x + 6)^2(x + 3)(x - 5)$



h.  $Y(x) = (x + 4)^3(x - 1)^2$



i.  $M(x) = (x + 1)^4(x + 5)$

