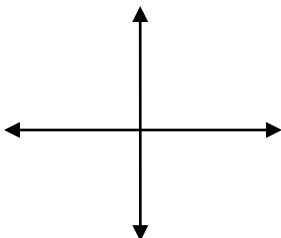


5.8 Analyze Graphs of Polynomial Functions/ Sketch Polynomial Functions in Factored Form Notes

Turning Points are points on the graph of a polynomial function that correspond to local maximum and minimum values

- The y-coordinate of a turning point is a _____ of the function if the point is higher than all nearby points.
- The y-coordinate of a turning point is a _____ of the function if the point is lower than all nearby points.



Turning Points of Polynomial Functions:

- 1) The graph of every polynomial function of degree n has _____ $n - 1$ turning points.
- 2) If a polynomial function has n distinct real zeros, then its graph has _____ $n - 1$ turning points.

How many turning points to the following polynomials have? Are they local maximum(s) or local minimum(s)?

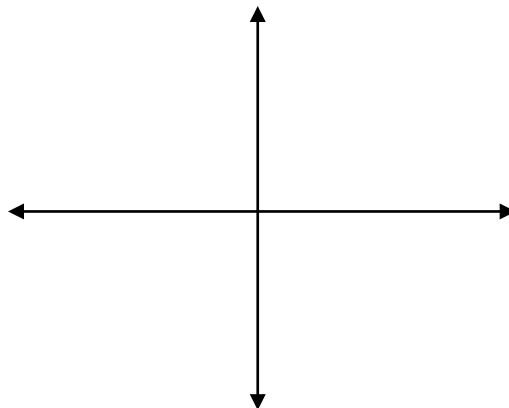
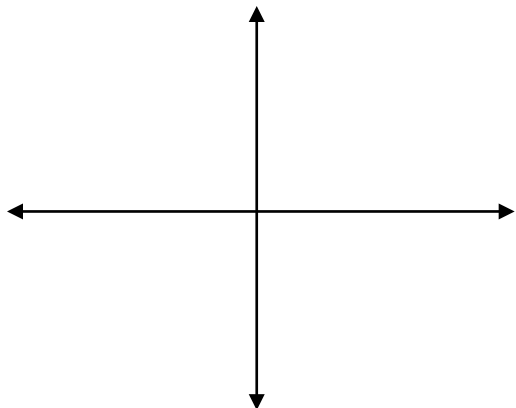
1) $f(x) = x^3 - 3x^2 + 6$

2) $g(x) = 10x - 6x^3 + 3x^2 - x^4 - 3$

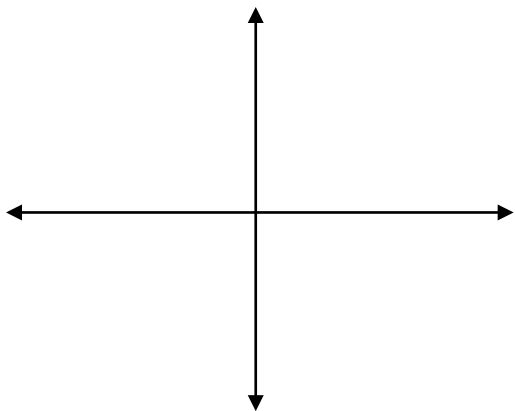
More practice: Sketch the graph of the polynomial using the end behavior, x-intercepts and y-intercept. Be sure to label your graphs.

3) $y = -2x(x + 2)(x - 1)$

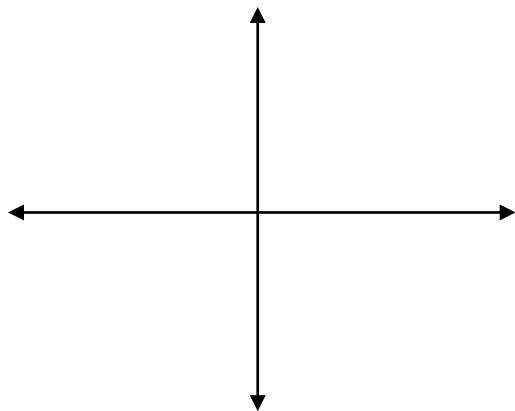
4) $y = x(x + 5)^2(x + 2)$



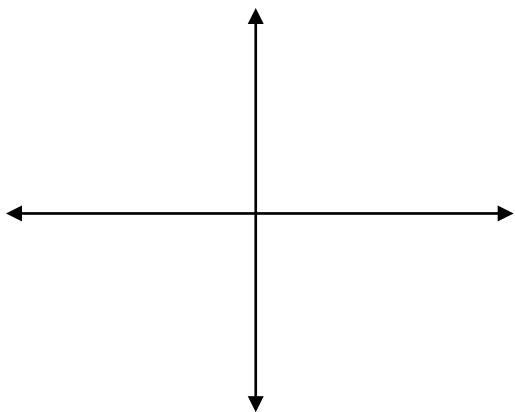
$$5) y = -(x + 3)(x + 1)(x - 2)$$



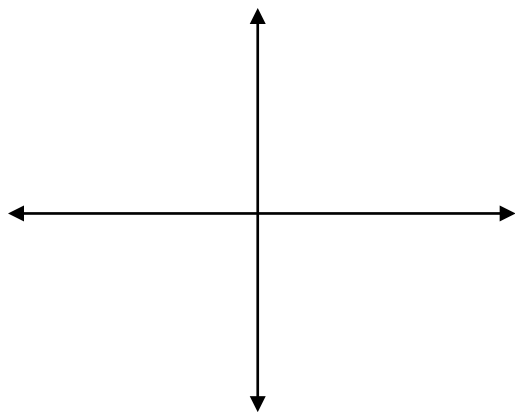
$$6) y = \frac{1}{2}(x + 3)^2(x - 1)^2$$



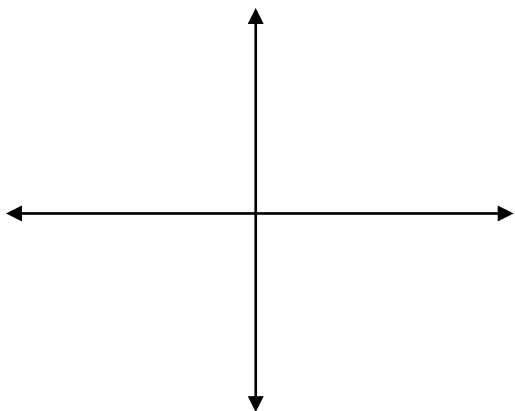
$$7) y = (x - 2)^2(x - 1)(x + 3)^2$$



$$8) y = -x(x + 1)^2(x - 2)^2(x - 3)$$



$$9) y = -4(x - 3)^2(x - 1)(x + 2)(x + 4)$$



$$10) y = \frac{1}{6}(x + 2)^2(x + 5)^2(x - 1)^2$$

