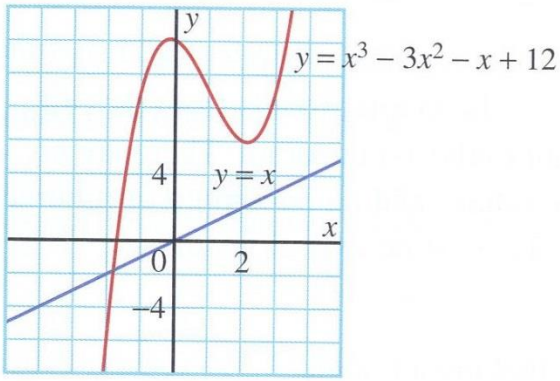
The equations of polynomial functions are extensions of the equations of linear and quadratic functions. Similarly, the graphs of polynomial functions are extensions of the graphs of linear and quadratic functions.

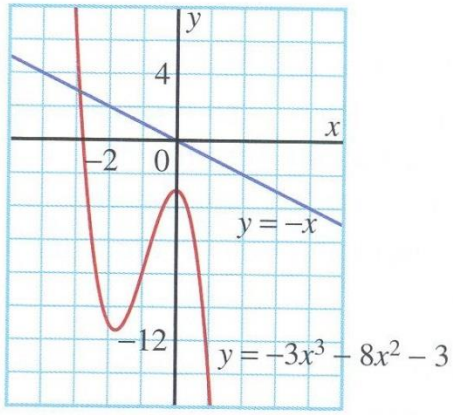
VISUALIZING

Properties of the Graphs of Polynomial Functions

Functions with odd degree

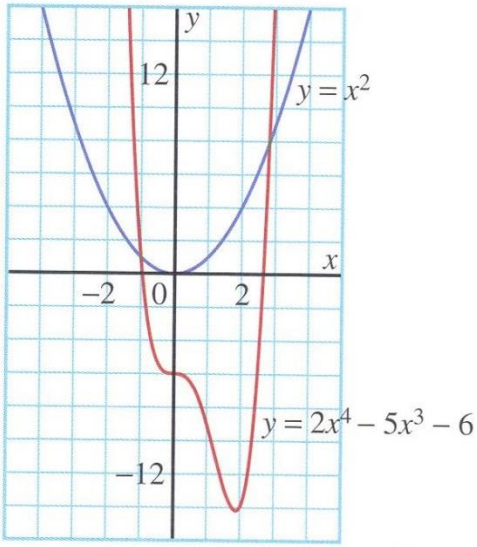


When the leading coefficient is positive, the graph extends from the 3rd quadrant to the 1st quadrant, as the graph of $y = x$ does.

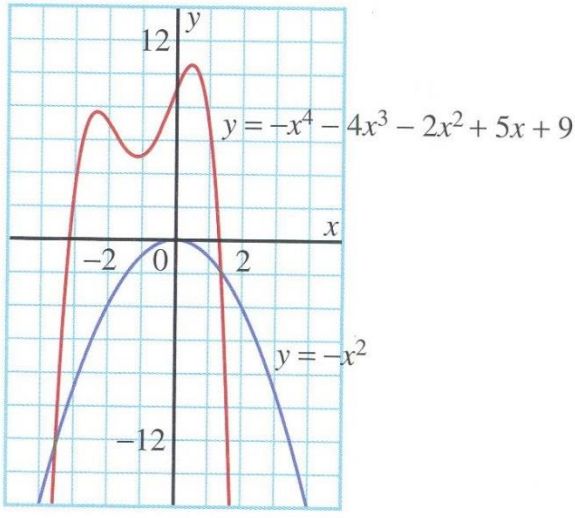


When the leading coefficient is negative, the graph extends from the 2nd quadrant to the 4th quadrant, as the graph of $y = -x$ does.

Functions with even degree



When the leading coefficient is positive, the graph extends from the 2nd quadrant to the 1st quadrant, as the graph of $y = x^2$ does.



When the leading coefficient is negative, the graph extends from the 3rd quadrant to the 4th quadrant, as the graph of $y = -x^2$ does.