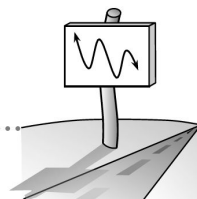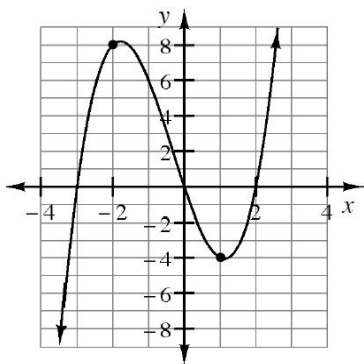**4.1.2** How can I write the equation?
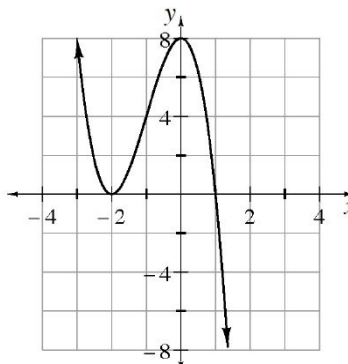
Writing Equations of Polynomial Functions

#22 Work with your team to write an equation for each of the following polynomial functions. Without using a graphing calculator, how can you check the accuracy of your equations?
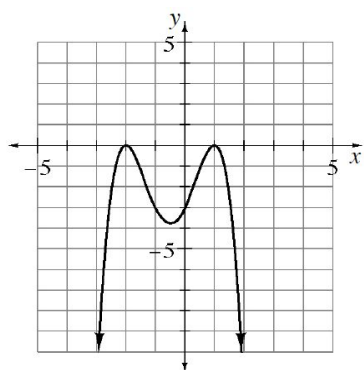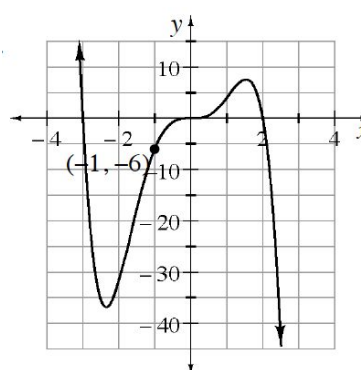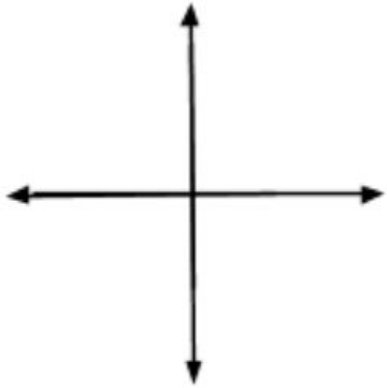
a.

b.

c.

d.

#23 The graph of a polynomial function "bounces off" the x-axis at $(-2, 0)$, crosses it at $(5, 0)$, and passes through the point $(1, -12)$.

a. Sketch a graph of this function. Then write a possible equation for this function.

b. Gilbert came up with the equation

$y = \frac{1}{27} (x + 2)^4(x - 5)$. Does his equation fit all of the given criteria? Why or why not? Is it the same as the equation you came up with?

c. What if it is also known that the graph passes through the point $(-1, -2)$? Does your equation from part (a) still work? Does Gilbert's equation in part (b) still work? Explain.

d. What information about the graph of a polynomial function is necessary to determine exactly one correct equation? Discuss this with your team.