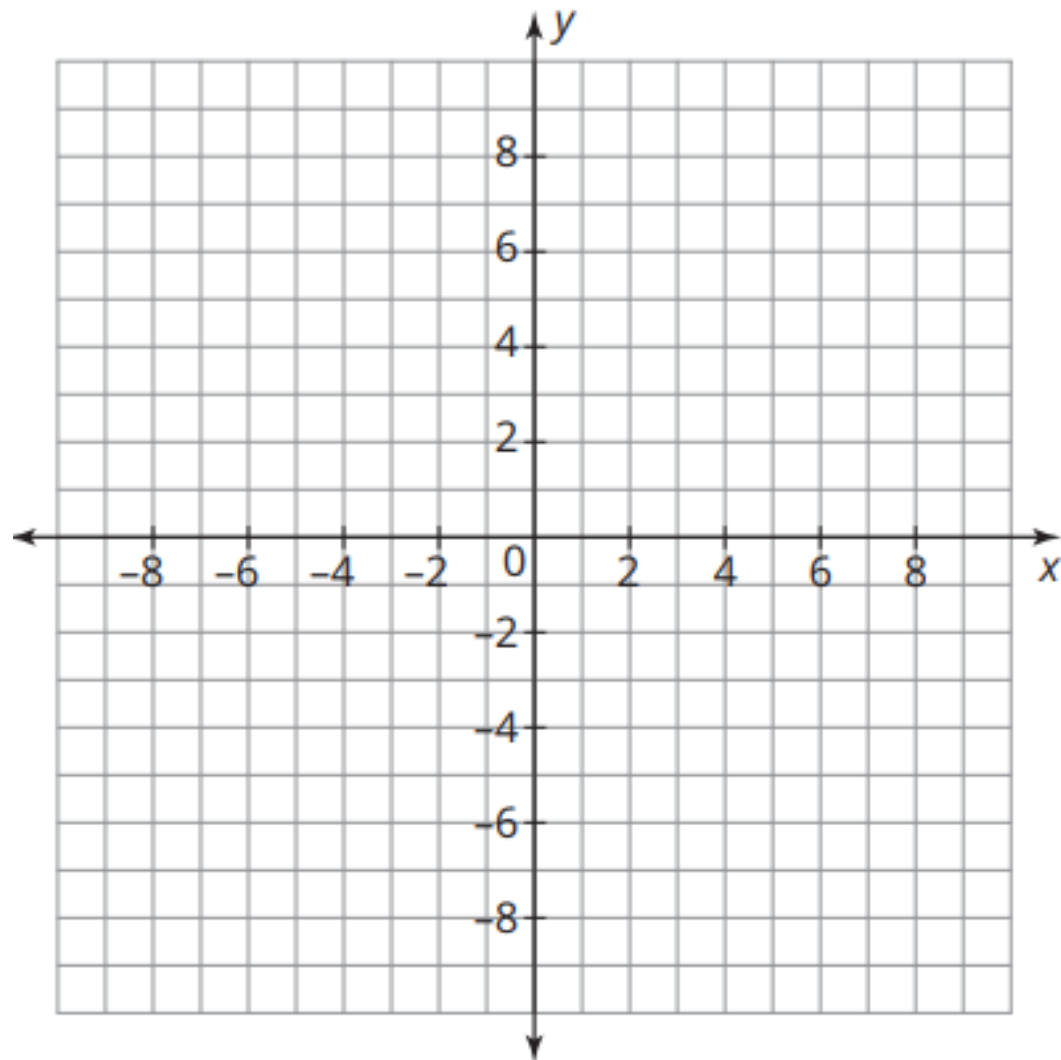


1. Use the coordinate plane to sketch each polynomial function. If the graph is not possible to sketch, explain why.

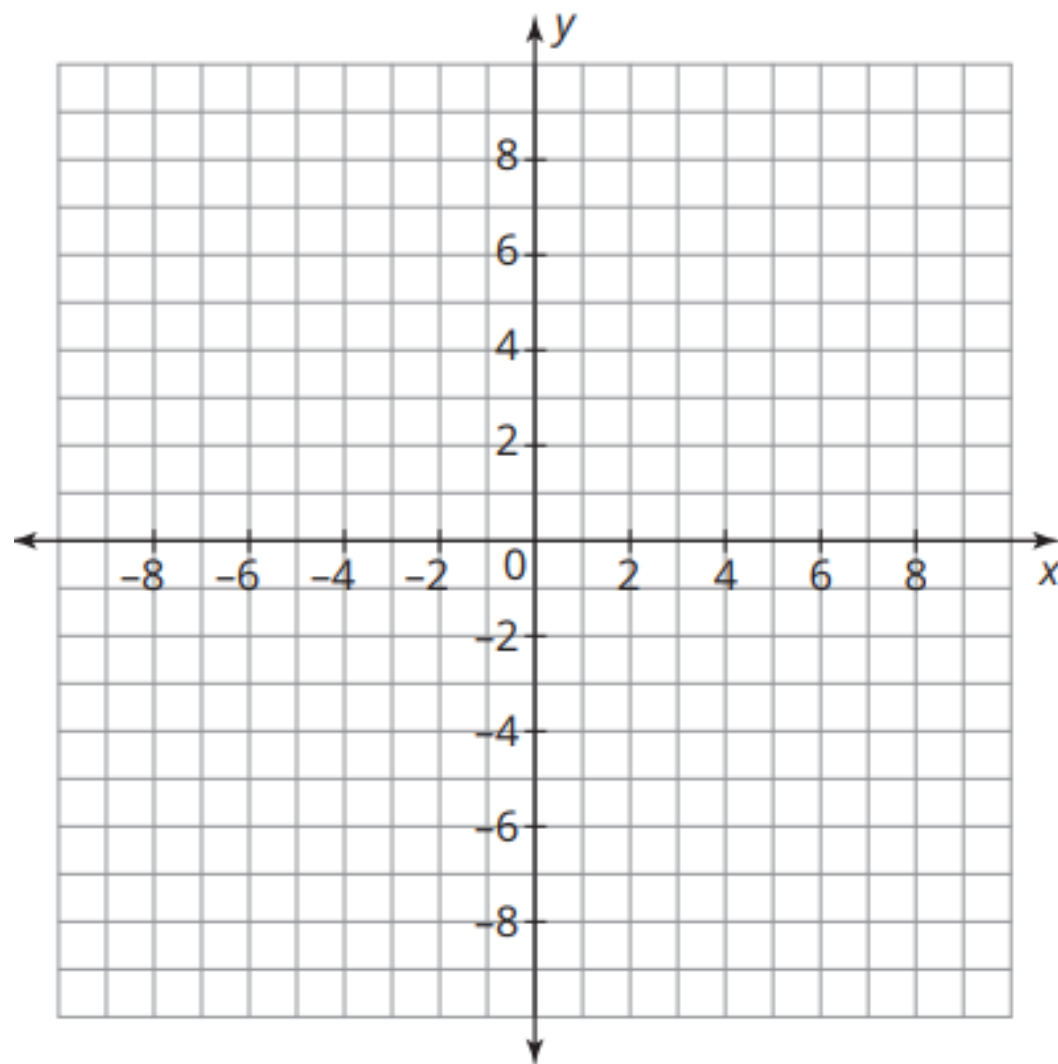
a. Characteristics:

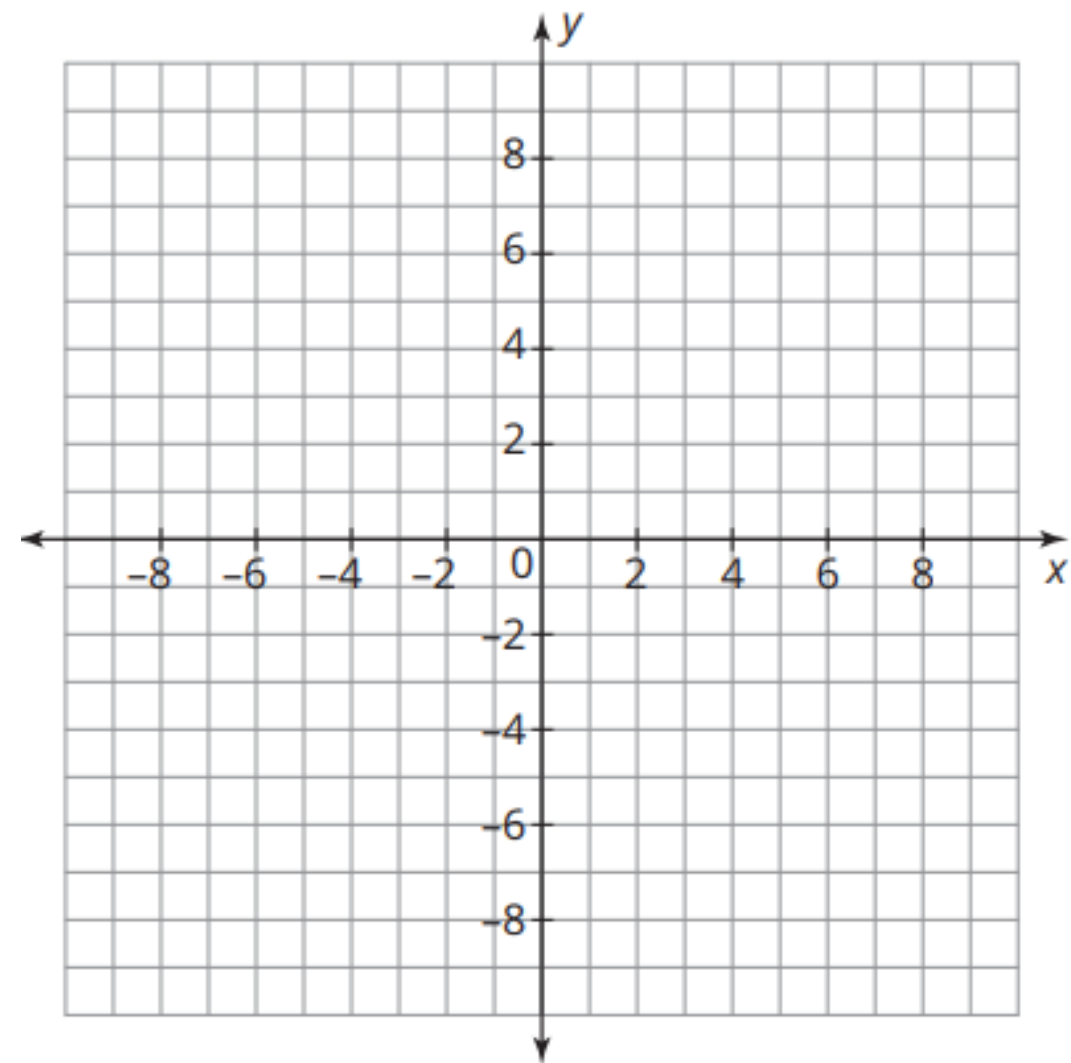
- degree 4
- has an a -value less than 0
- relative maximum at $x = -4$
- absolute maximum at $x = 3$



b. Characteristics:

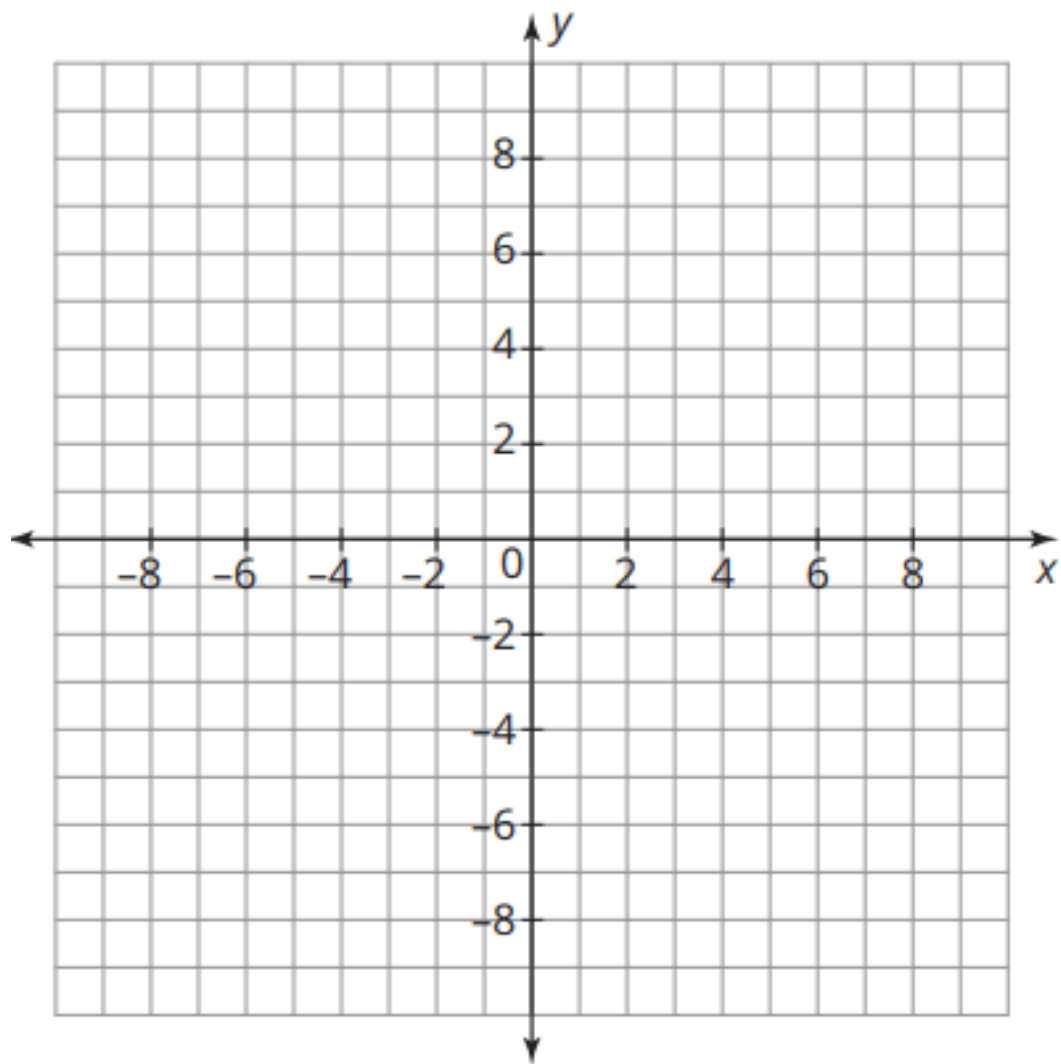
- always increasing
- y -intercept at 5
- x -intercept at -1.7





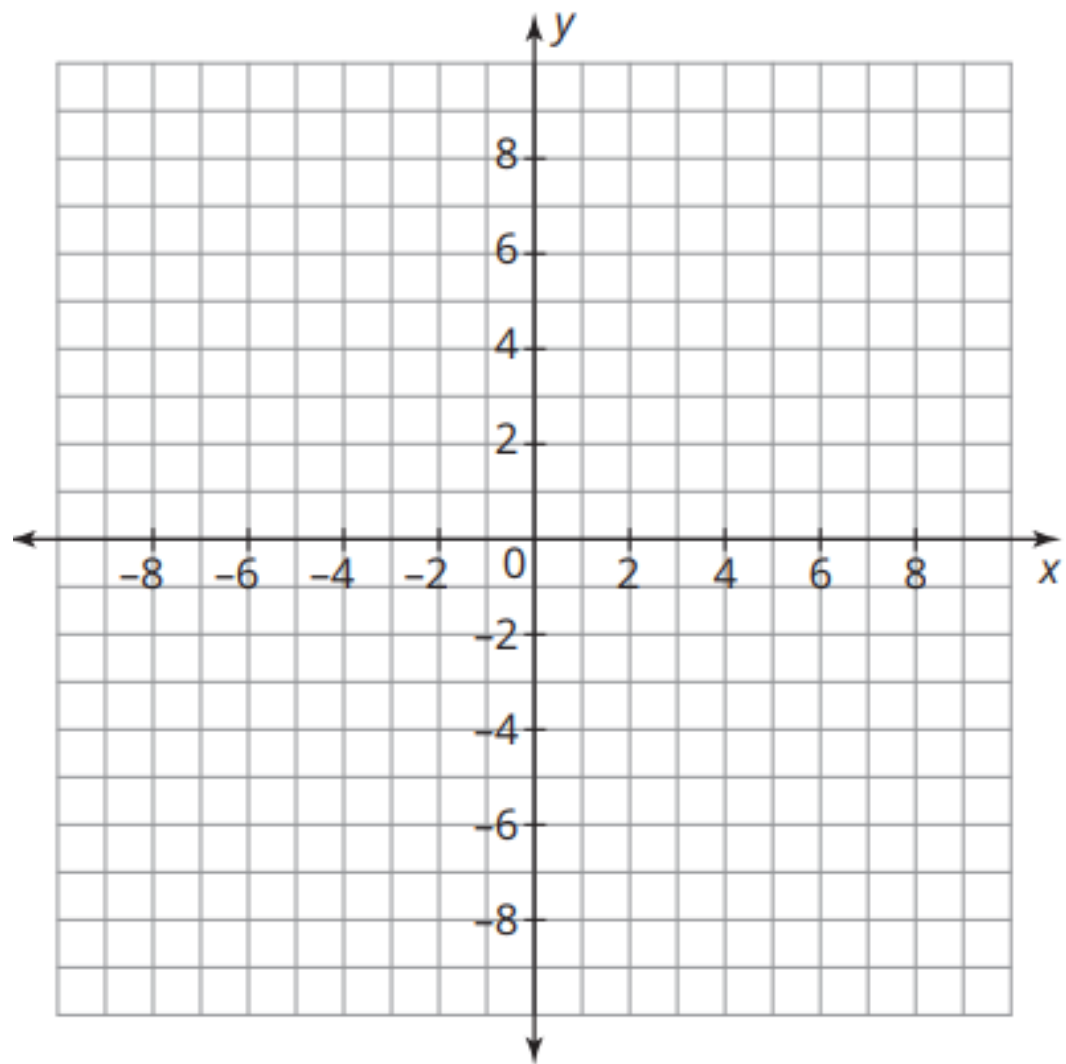
c. Characteristics:

- **odd degree**
- **increases to $x = -3$, then decreases to $x = 3$, then increases**
- **absolute maximum at $y = 4$**



d. Characteristics:

- as $x \rightarrow \infty, f(x) \rightarrow \infty$
as $x \rightarrow -\infty, f(x) \rightarrow \infty$
- four x-intercepts
- relative maximum at $y = 3$

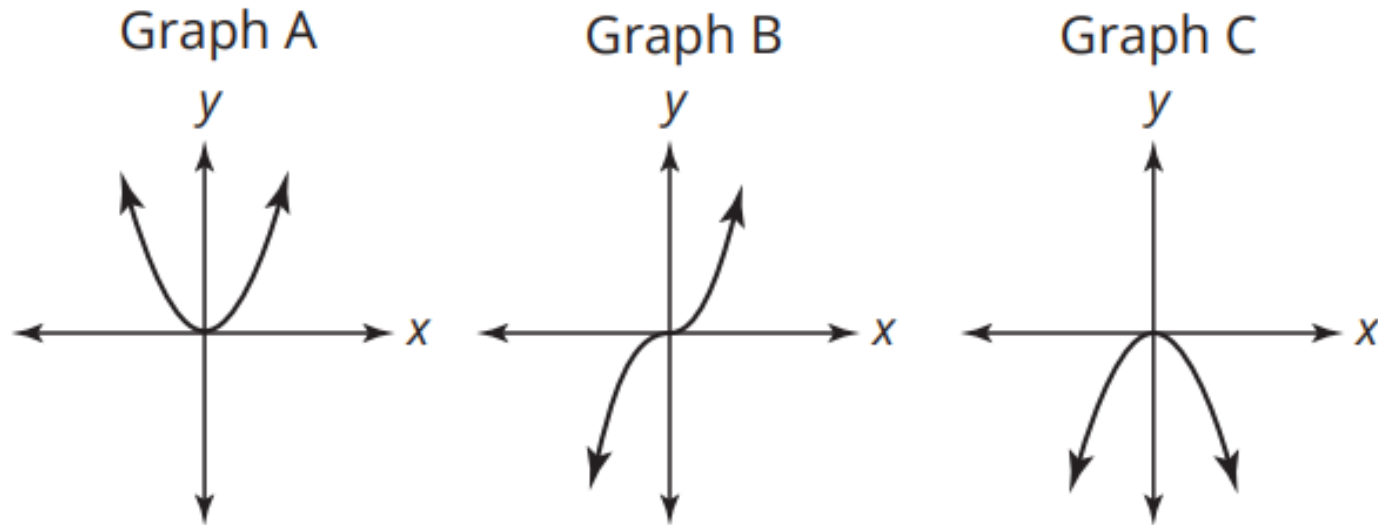


e. Characteristics:

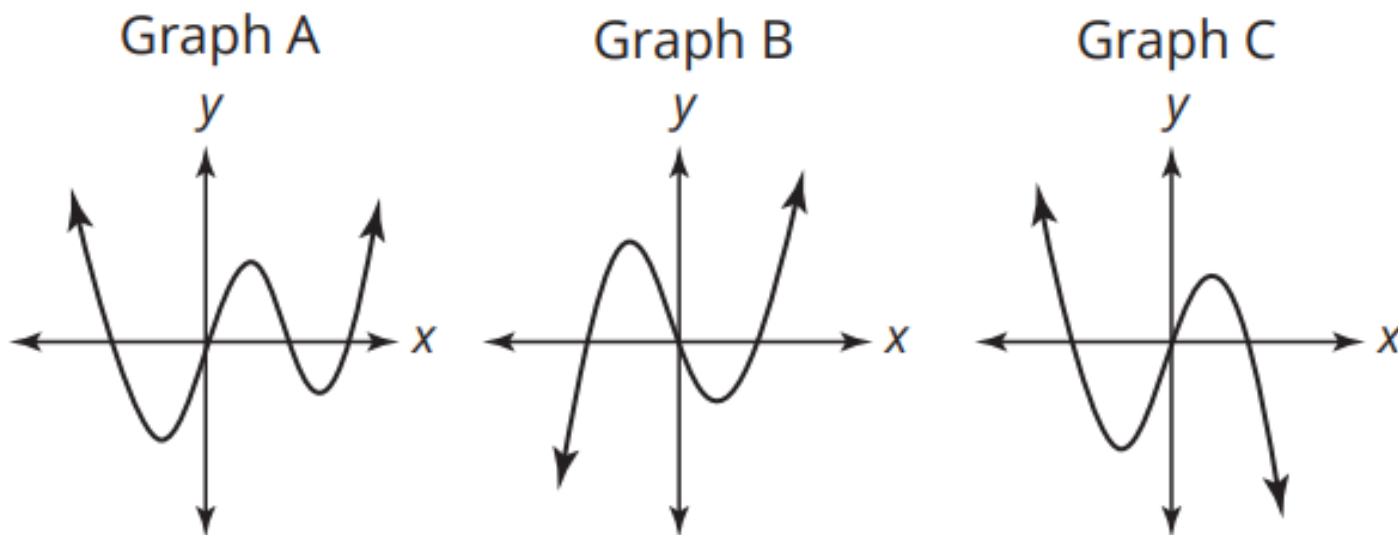
- **x-intercepts at -2 , 2 , and 5**
- **negative a -value**
- **degree 2**

2. Choose the possible graph(s) for each given polynomial function $f(x)$.

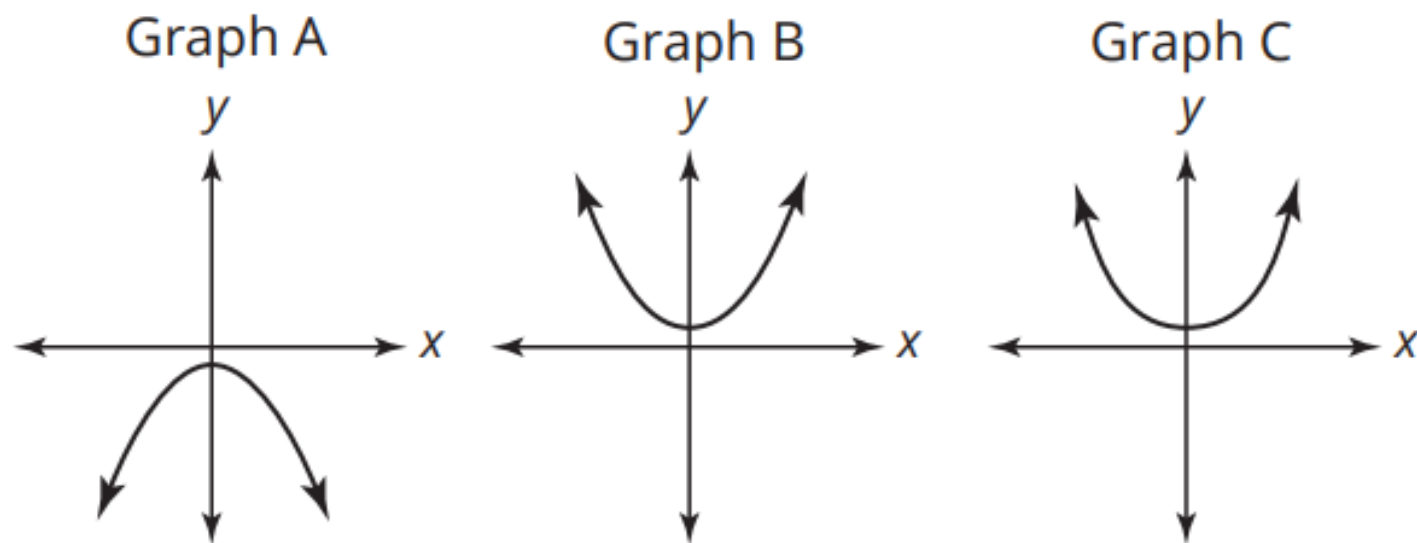
a. Which graph(s) could be the graph of $f(x) = 2x^2$?



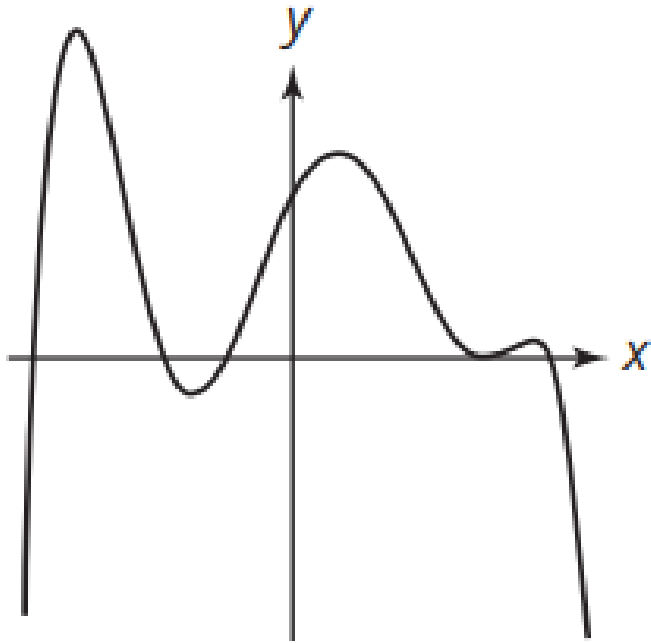
b. Which graph(s) could be the graph of $f(x) = -x^3 - x^2 + 6x$?



c. Which graph(s) could be the graph of $f(x) = x^4 + 1$?



a.



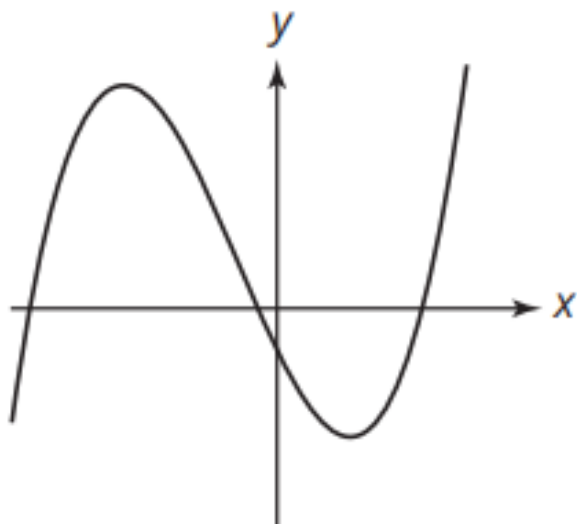
3. Analyze each graph. Circle the function(s) which could model the graph. Describe your reasoning to either eliminate or choose each function.

$$f_1(x) = -3x^5 - 2x^2 + 4x + 7$$

$$f_2(x) = -(x + 2)(x + 1.5)(x + 0.5)(x - 2.5)^2(x - 3)$$

$$f_3(x) = -3x^4 - 2x^2 + 4x + 7$$

b.



$$f_1(x) = 0.5(x + 7)(x + 1)(x - 5) - 3$$

$$f_2(x) = -2(x + 7)(x + 1)(x - 5) - 3$$

$$f_3(x) = 2(x + 7)(x + 1)(x - 5)(x - 3)$$