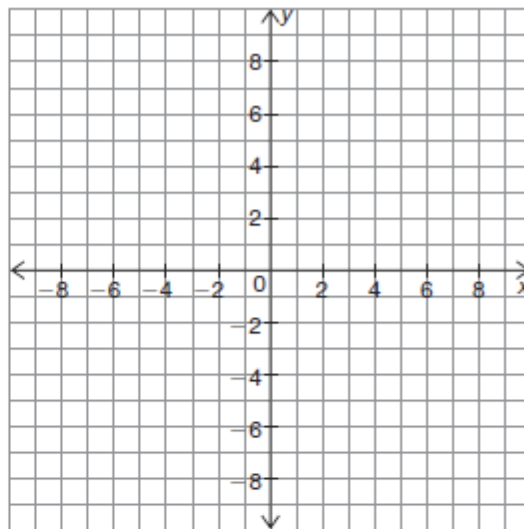


Evaluate: Polynomial Characteristics

1. Use the coordinate plane to sketch a graph with the characteristics given. If the graph is not possible to sketch, explain why.

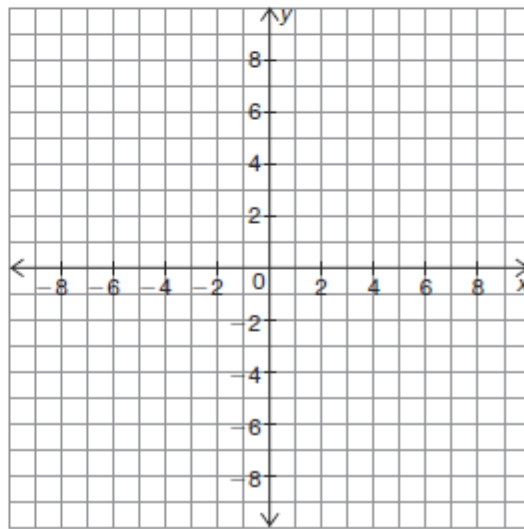
a. Characteristics:

- degree 4
- starts in quadrant III
- ends in quadrant IV
- relative maximum at $x = -4$
- absolute maximum at $x = 3$



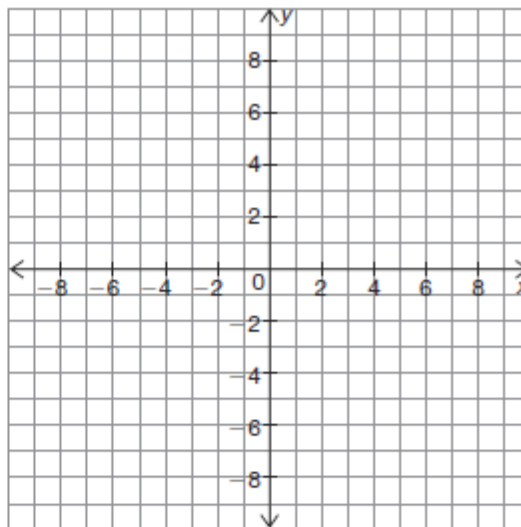
b. Characteristics:

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



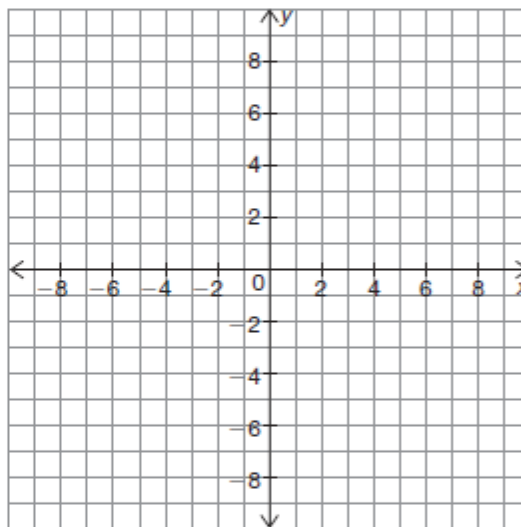
c. Characteristics:

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



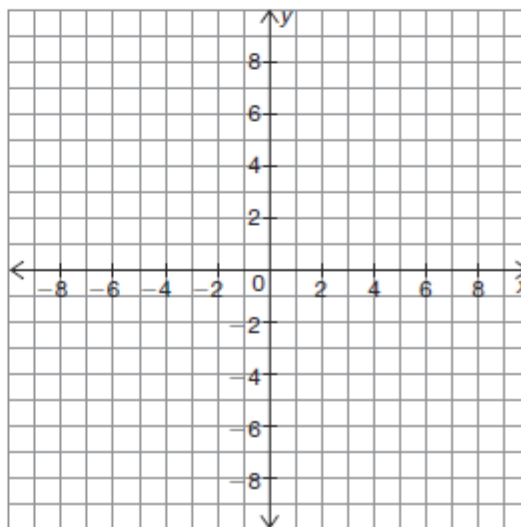
d. Characteristics:

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



e. Characteristics:

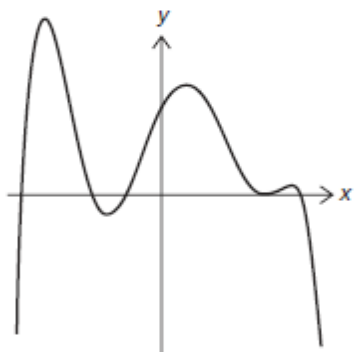
- x -intercepts at $-2, 2$ and 5
- negative a value
- degree 2



2. Analyze each graph. Circle the function(s) which could model the graph. Under each answer choice describe your reasoning to either eliminate or choose that function.

a.

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

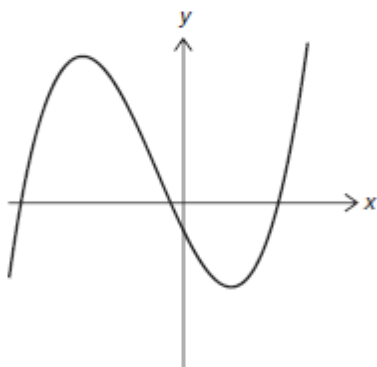


$$f_2(x) = -(x + 2)(x + 1.5)(x + 0.5)(x - 2.5)^2(x - 3)$$

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

b.

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



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

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