

Name \_\_\_\_\_ Date \_\_\_\_\_

## Function Families for 200, Alex... Recognizing Functions by Characteristics

### Problem Set

Choose the appropriate function family or families to complete each sentence based on the given characteristic(s).

linear functions      quadratic functions  
exponential functions      linear absolute value functions

1. The graph of this function family is a straight line. The function family is linear functions.
2. The graph of this function family has an increasing interval and a decreasing interval. The function family is \_\_\_\_\_.
3. The graph of this function family has an absolute minimum. The function family is \_\_\_\_\_.
4. The graph of this function family is decreasing over the entire domain. The function family is \_\_\_\_\_.
5. The graph of this function family forms a V shape. The function family is \_\_\_\_\_.
6. The graph of this function family has an increasing interval and a decreasing interval and forms a U shape. The function family is \_\_\_\_\_.
7. The graph of this function family does not have an absolute maximum or absolute minimum and is a smooth curve. The function family is \_\_\_\_\_.
8. The graph of this function family has an absolute maximum or absolute minimum and is made up of straight lines. The function family is \_\_\_\_\_.
9. The graph of this function family is made up of straight lines and does not have an absolute maximum or absolute minimum. The function family is \_\_\_\_\_.
10. The graph of this function family decreases over the entire domain and is a smooth curve. The function family is \_\_\_\_\_.

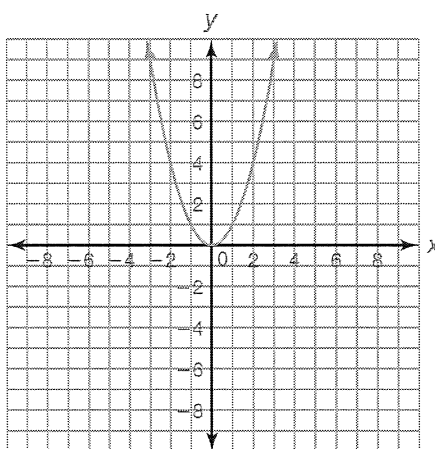
Create an equation and sketch a graph for a function with each set of given characteristics. Use values that are any real numbers between  $-10$  and  $10$ .

11. Create an equation and sketch a graph that:

- is a smooth curve,
- is continuous,
- has a minimum, and
- is quadratic.

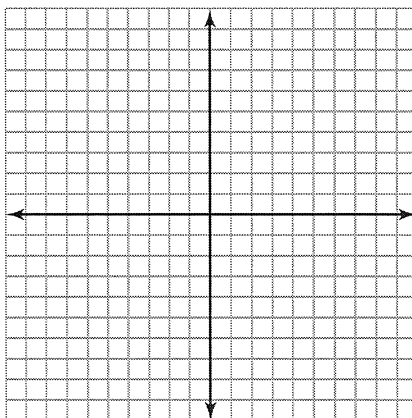
Answers will vary.

$f(x) = x^2$



12. Create an equation and sketch a graph that:

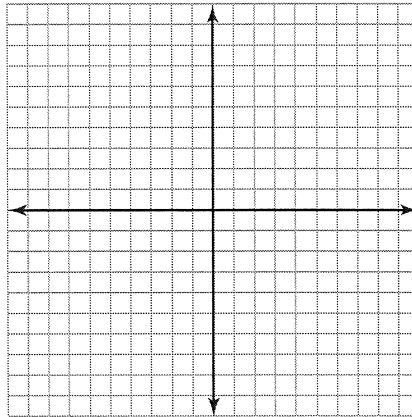
- is linear,
- is discrete, and
- is decreasing across the entire domain.



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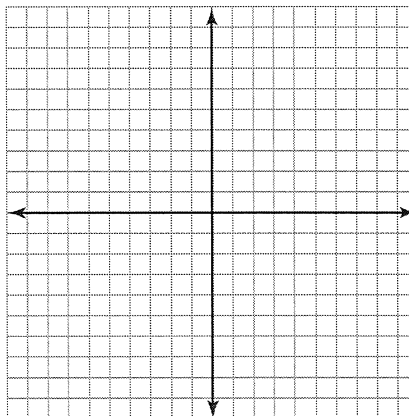
13. Create an equation and sketch a graph that:

- is a smooth curve,
- is increasing across the entire domain,
- is continuous, and
- is exponential.



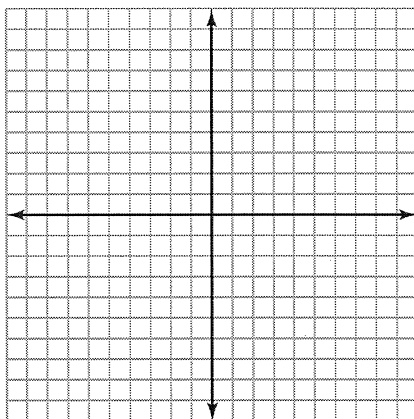
14. Create an equation and sketch a graph that:

- has a maximum,
- is continuous, and
- is a linear absolute value function.



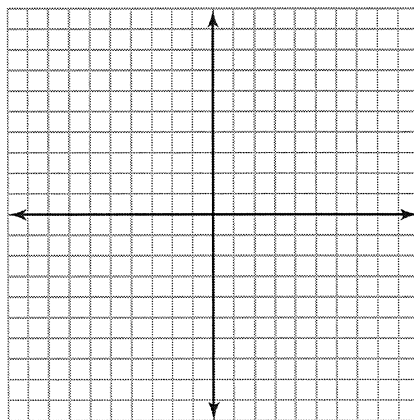
15. Create an equation and sketch a graph that:

- is linear,
- is continuous,
- is neither increasing nor decreasing across the entire domain, and
- does not pass through the origin.



16. Create an equation and sketch a graph that:

- is discrete,
- has a maximum,
- does not pass through the origin, and
- is quadratic.

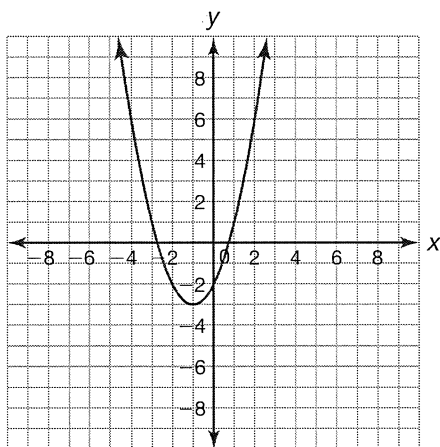


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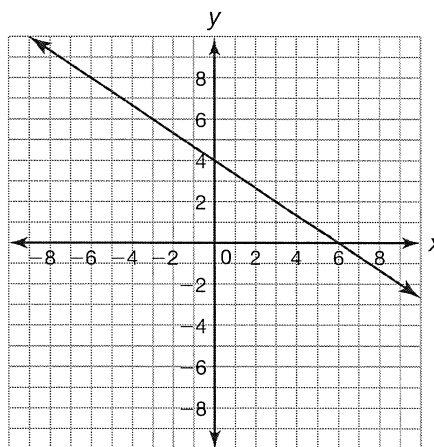
Choose the function family represented by each graph.

- |                                |                           |                      |
|--------------------------------|---------------------------|----------------------|
| linear function                | quadratic function        | exponential function |
| linear absolute value function | linear piecewise function |                      |

17.

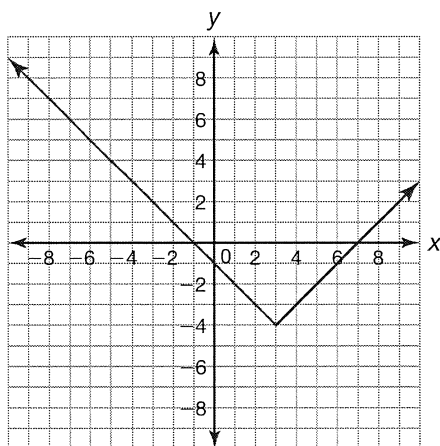


18.

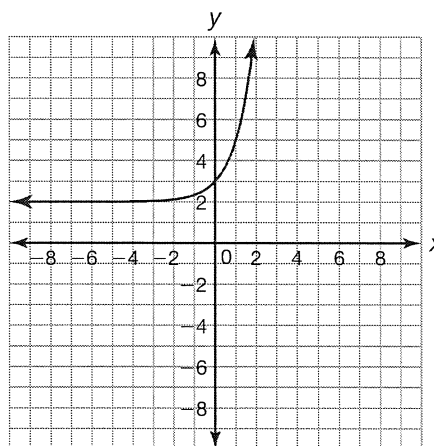


The graph represents a quadratic function.

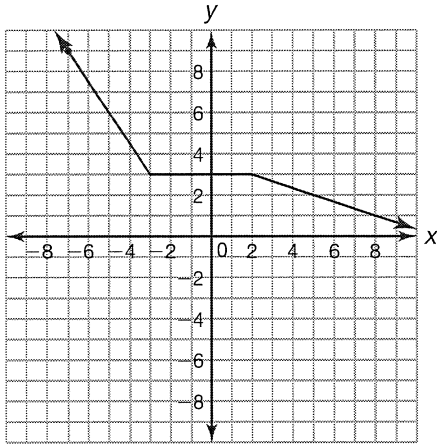
19.



20.



21.



22.

