

Write

Identify the function family or families that are described by the given characteristic(s). Choose from linear, linear absolute value, exponential, and quadratic functions.

1. The graph of this function family has an absolute minimum.
2. The graph of this function family is decreasing over the entire domain.
3. The graph of this function family has an increasing interval and a decreasing interval and forms a U shape.
4. The graph of this function family does not have an absolute maximum or absolute minimum and is a smooth curve.
5. The graph of this function family has an absolute maximum or absolute minimum and is made up of straight lines.
6. The graph of this function family contains straight lines and does not have an absolute maximum or absolute minimum.

Remember

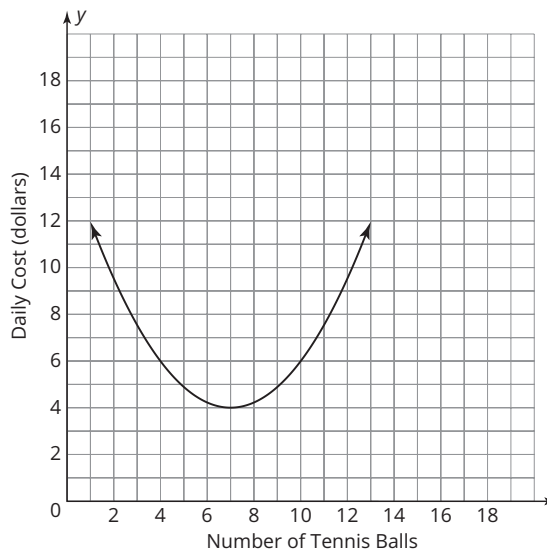
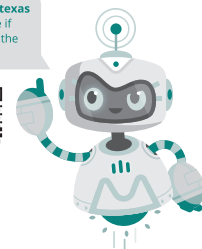
Function families have key characteristics that are common among all functions in the family. Knowing these key characteristics is useful when sketching a graph of the function.

Practice

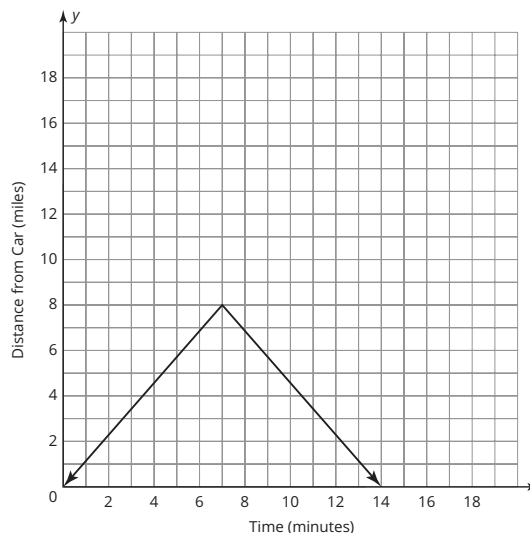
For each scenario and its graph, identify the appropriate function family. Then, based on the problem situation, identify whether the data values represented in the graph are discrete or continuous. Finally, identify the graphical behavior of the function that models the scenario based on the characteristics of its function family.

1. A manufacturing company finds that the daily costs associated with making tennis balls is high if they don't make enough balls and then becomes high again if they make too many balls. The function graphed models the daily costs of making x tennis balls.

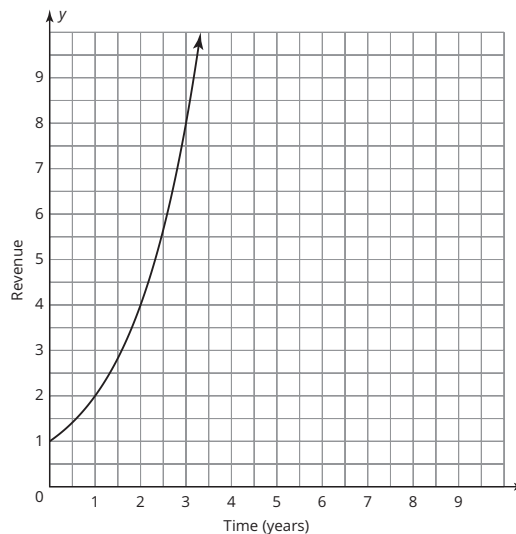
Visit livehint.com/texas or use this QR code if you need a hint on the Practice questions.



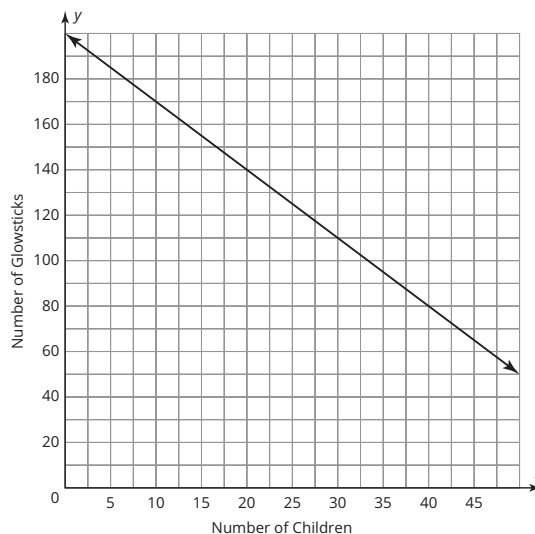
2. Greg is training for a mountain bike race. He leaves his car at the beginning of a trail and proceeds to bike 8 miles away and then comes back the same way to his car. If he bikes at a constant rate, the function graphed models the distance he is away from his car after x minutes.



3. A local television company determines that the revenue it gets from running ads doubles each year. The function graphed models the revenue from advertising after x years.



4. The Redwood Heights Women's Club is hosting a summer nighttime party in the park. They are handing out glow sticks to all the children who attend. They start with 200 glow sticks and each child receives 3 glow sticks. The function graphed models the number of glow sticks they have left after x children have entered.

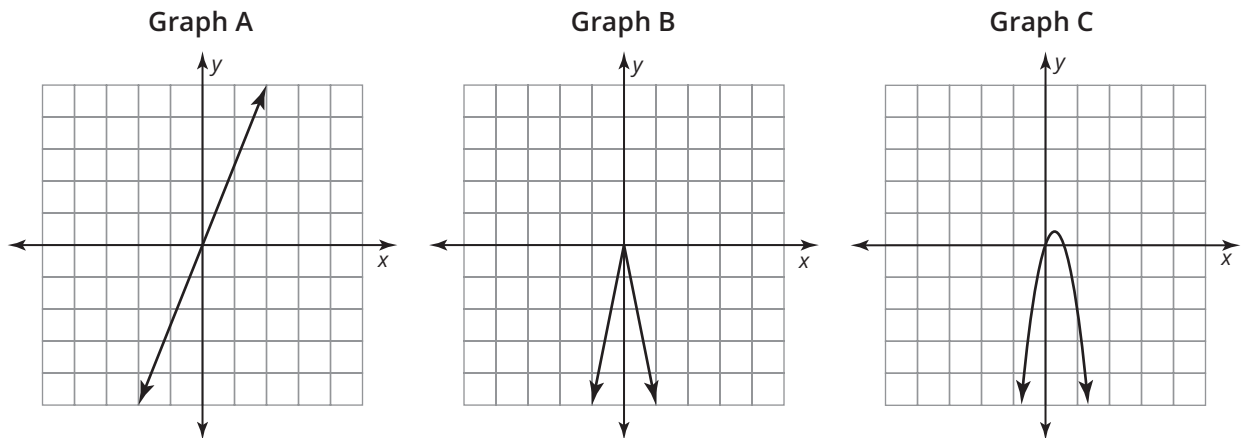


Stretch

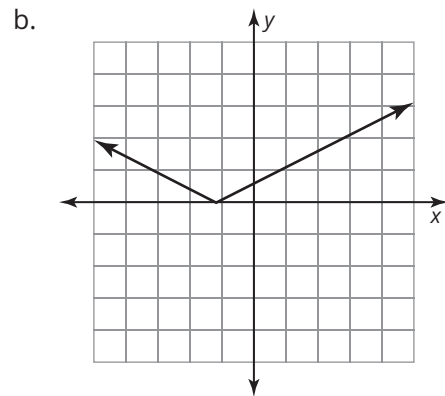
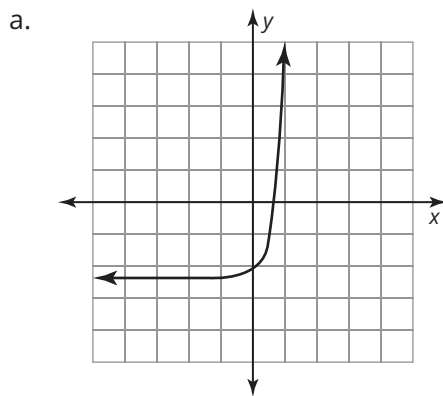
Write an equation and sketch a graph that has a minimum in Quadrant IV, is continuous, and is a linear absolute value function.

Review

1. Choose the graph that represents the function $f(x) = -x^2 + 3x$.



2. Determine whether each graph represents an increasing function, a decreasing function, a constant function, or a combination of increasing and decreasing functions.



3. Solve the equation $68 = -7 - 15b$.

4. Evaluate the expression $x^2 + 5x - 19$ for $x = -4$.