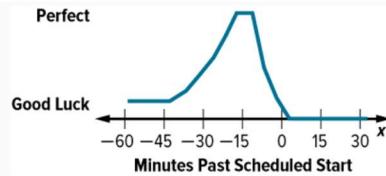


SC Algebra 1
3.6 Sketching Graphs

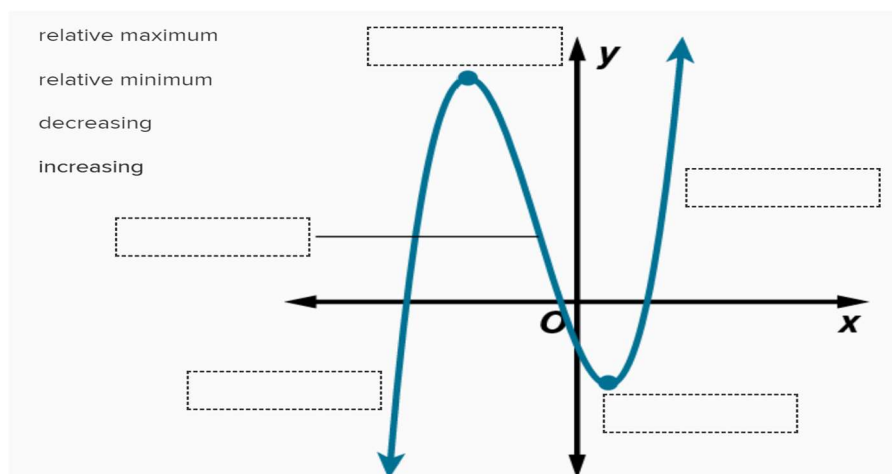
Warm Up:

According to Life Hacker, The graph illustrates the best time to arrive for a job interview. Use the graph to answer the questions.



1. According to the graph, what is the range of time that a person should arrive?
2. What happens to a person's chances of getting the job when they arrive too early?
3. What happens to a person's chances of getting the job when they arrive too late?
4. How late could a person arrive and still have a chance at getting the job?
5. Describe the difference between arriving early and arriving late.

Speak Like a Mathematician:



Example 1: Sketch the Graph of a Linear Function

a) In 2015, Christoph Strasser set a cycling record by riding 566 miles in a 24-hour period. The distance he rode over 24 hours can be represented by a function. Use context clues and key features to sketch a graph that shows the distance traveled y as a function of time x .

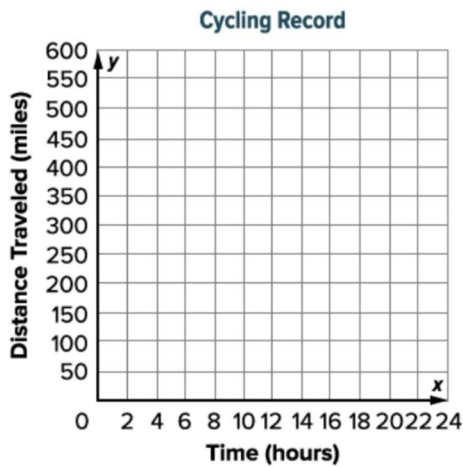
y -intercept:

linear or nonlinear:

positive:

increasing:

end behavior:



b) Maggie is taking a road trip and decides to keep track of how much gasoline she is using. He notices that the amount of gasoline used by her car depends on the distance she has traveled.

Which graph could be used to show the amount of gasoline used y as a function of how far she traveled x ? Select all that apply

☐ **A**

☐ **B**

☐ **C**

☐ **D**

☐ **E**

☐ **F**

Example 2: Sketch the Graph of a Symmetric Function

A person's happiness can be affected by temperature. Interpret the key features to sketch a nonlinear graph that shows the happiness of a person y as a function of temperature x .

Positive: between about 25°F and 89°F

Negative: for temperatures less than 25°F and greater than 89°F

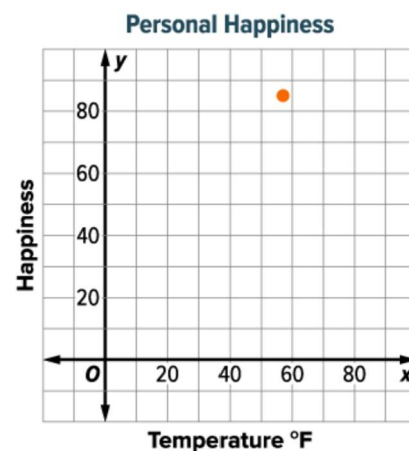
Increasing: for temperatures less than about 57°F

Decreasing: for temperatures greater than about 57°F

Relative Maximum: at about 57°F , when a person's happiness is about 85

End Behavior: As temperature increases or decreases, a person's happiness decreases.

Symmetry: a person's happiness for temperatures less than 57°F is the same as their happiness for temperatures greater than 57°F .



Example 3: Sketch the Graph of a Nonlinear Function

The number of people in line for a roller coaster throughout the day can be modeled by the function. Interpret the key features if x represents the time in hours since the ride opened at 10:00 A.M. and y represents the number of people in line. Sketch the graph of the function.

Intercepts: The graph intersects the x axis at $(-0.5, 0)$ and $(12, 0)$ and intersects the y -axis at $(0, 220)$

Positive: between $x = -0.5$ and $x = 12$

Negative: for $x < -0.5$ and $x > 12$

Increasing: for $x < 1.4$ and between $x = 5.3$ and $x = 9.9$

Decreasing: for between $x = 1.4$ and $x = 5.3$ and for $x > 9.9$

Relative Minimum: at $(5.3, 133)$

Relative Maximum: at $(1.4, 448)$ and $(9.9, 643)$

End Behavior: As x increases or decreases, the value of y decreases.

