

Objective: To assess what students know in regards to functions.

Name: _____

Period: _____

The quiz will have 5 parts:

- Part 1: What is a function? (4 points)
- Part 2: Deciphering functions (6 points)
- Part 3: Graphs and functions (5 points)
- Part 4: Piecewise and Step functions (5 points)
- Part 5: Exponential Functions (5 points)

In Part 4, please choose one of the questions to answer.

Part 1 - 4 points

Souplantation is a restaurant where their prices are based on the time of day. Breakfast is from 9:00 a.m. to 11:59 a.m. and costs \$7.99. Lunch is from 12:00 p.m. to 3:59 p.m. and costs \$8.99. Dinner is from 4:00 p.m. to 10:00 p.m. and costs \$9.99. Below is a sample of some customers' time they came and their price.

Time	Cost
9:30 a.m.	\$7.99
10:07 a.m.	\$7.99
11:58 a.m.	\$7.99
12:02 p.m.	\$8.99
2:23 p.m.	\$8.99
5:21 p.m.	\$9.99
8:11 p.m.	\$9.99

Let C equal the cost and t equal the time.

(a) Is C a function of t ? Explain your reasoning. (2 points)

(b) Is t a function of C ? Explain your reasoning. (2 points)

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Part 2 - 6 points

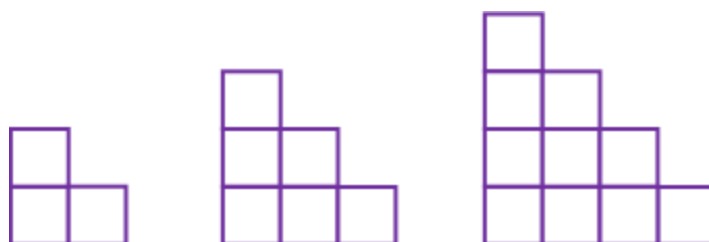
Let $c(m)$ represent the number of calories burned as a function of m minutes of running. Restate the following in plain language:

(a) $c(20) = 215$

(b) $c(35) < c(50)$

(c) $c(75) > 800$

Part 2 continued



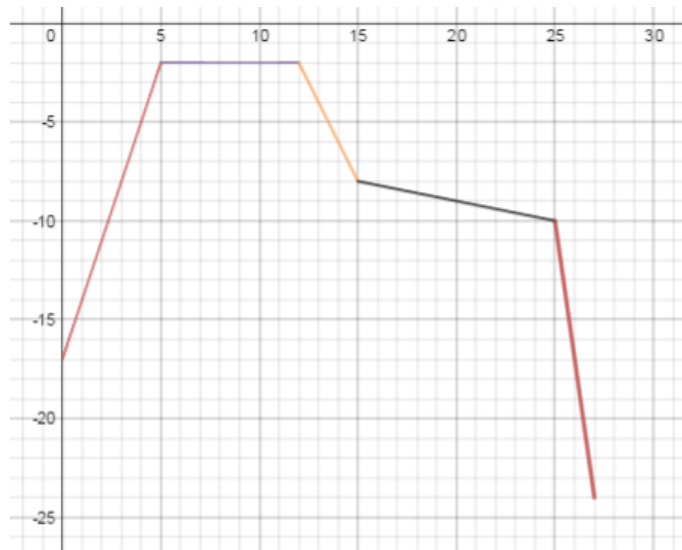
(a) What is the next figure? (1 point)

(b) Write a function to describe this pattern. (2 points)

If you are unsure of an equation, you can write in words what is happening for ½ credit.

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Part 3 - 5 points



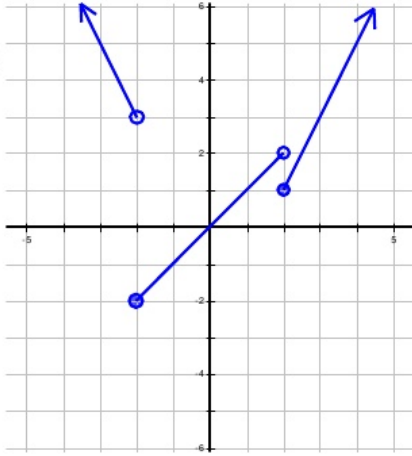
The graph above shows a whale's journey to look for food in the ocean. x represents time in minutes, and y represents distance below sea level, which is 0, in meters. The graph ends when the whale finds food.

- (a) What is the closest distance the whale came to the surface? (1 point)
- (b) Approximately how many minutes did it take the whale to find food? (1 point)
- (c) Tell a story about the whale's journey to find food that fits the information in the graph. (3 pts)

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Part 4 (Piecewise) - 5 points

Please choose one of the questions to answer (piecewise or step).



The three equations used in this piecewise are:

- $y = -2x - 1$
- $y = x$
- $y = 2x - 3$

- a. Which equation goes with which line/curve? (2 points)
- b. What is the domain? (2 points)
- c. What is the range? (1 point)

Part 4 (Step)

Create a scenario to use a step function. Write about that scenario and then graph it. (5 points)

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Part 5 - 5 points

Explain using words, graphs, functions or diagrams the similarities and differences of linear and exponential growth models. Be as specific and detailed as possible.

1 point	2 points	3 points	4 points	5 points
<ul style="list-style-type: none"> - Explains one growth model - Inaccurate 	<ul style="list-style-type: none"> - Explains both growth models - Inaccurate 	<ul style="list-style-type: none"> - Explains both growth models - Accurate 	<ul style="list-style-type: none"> - Explains both growth models - Accurate - Has an example 	<ul style="list-style-type: none"> - Explains both growth models - Accurate - Has an example with a graph or diagram of both