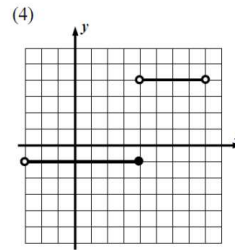
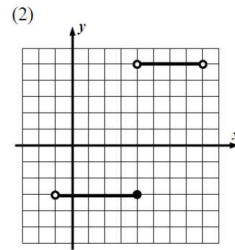
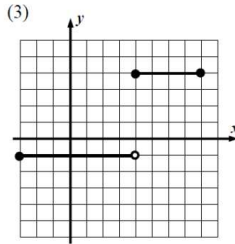
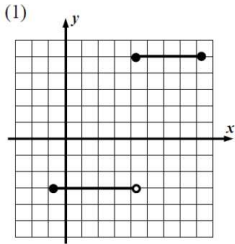


Name _____

1 Which of the following is the graph of the function $f(x) = \begin{cases} -3 & -1 \leq x < 4 \\ 5 & 4 \leq x \leq 8 \end{cases}$?



2 A ball was dropped from the top of a 50 foot tall building. Its height above the ground is given by the equation $h = 50 - 16.1t^2$, where t is the time it has been dropping in seconds. Which of the following gives the time it takes for the ball to reach the ground?

- (1) 1.34 seconds
- (2) 1.76 seconds
- (3) 1.89 seconds
- (4) 2.09 seconds

3 A dart arcs through the air such that its height in feet above the ground can be modeled by the equation $y = -0.1(x - 4)^2 + 7$, where x represents its horizontal distance along the ground. What is the maximum height the dart reaches on its path?

- (1) 7.5
- (2) 5.9
- (3) 8.6
- (4) 4

4 A text plan charges a base price of \$10.00 per month and an additional \$0.05 per text. If y represents the cost of the text plan and x represents the number of texts sent then:

(a) Write a model for the cost, y , as a function of the number of texts, x .

(b) If the charge for a month of the texting was \$13.90, then determine algebraically how many texts were sent.

(c) Explain why this is an example of a discrete function.

5 Wildlife biologists model the population of wolves in a preserve using the equation $w(t) = 135(1.18)^t$, where w is the number of wolves and t is the number of years since they were introduced into the preserve. In the function $w(t)$, explain what 135 and 1.18 represent.

Name _____

9 The number of likes generated by a social media advertisement are being tracked by an advertising firm. The total likes is shown in the table below as a function of the number of days since the advertisement was first posted.

Days Since Posting, x	1	3	7	10	15
Number of likes, y	18	59	143	218	638

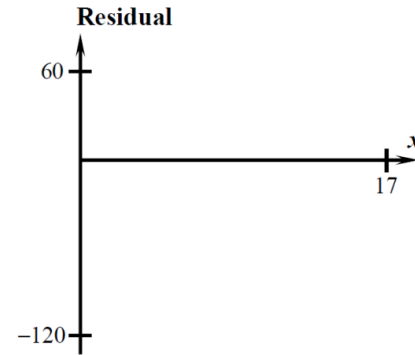
(a) Create linear and exponential equations of best fit. Round all parameters to the nearest hundredth. Also state the correlation coefficients for both models.

Linear: $y = ax + b$

Exponential: $y = a(b)^x$

(b) Explain which model should predict the number of likes better.

(c) For the exponential model, create a sketch of the residuals produced by this model.



(d) Does the pattern of the residuals indicate that the exponential model is appropriate? Explain?

(e) After 3 weeks, the add had generated 3,027 likes. Would the exponential model from (a) under predict or over predict the number of likes? By how many?

wednesday

thursday