Name: Key HW# 26 Date: _____

UNIT 6A REVIEW

1. Which set of coordinate points is an example of a function?

   1) { (-1,2) (3,-4) (7,6) (3,8) }

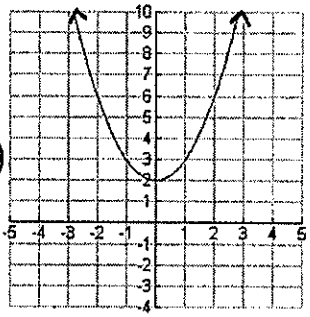
   2) { (-1,2) (3,-4) (3,6) (7,8) }

   (3) { (-1,2) (3,-4) (5,8) (7,8) }

   4) { (-1,2) (3,-4) (5,6) (5,-4) }

   x-values do NOT repeat!

2. State the domain and range in set builder notation and interval notation.



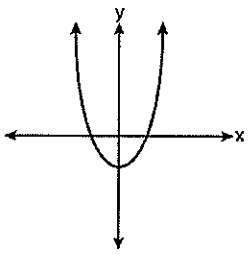
Set Builder Notation I.N.

D: $\{x \mid x \in \mathbb{R}\}$ $(-\infty, \infty)$

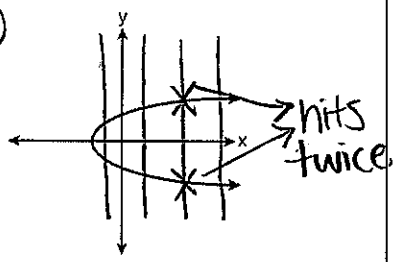
R: $\{y \mid y \geq 2\}$ $[2, \infty)$

3. Which graph does *not* represent a function?

1)

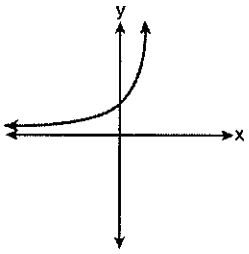


(2)

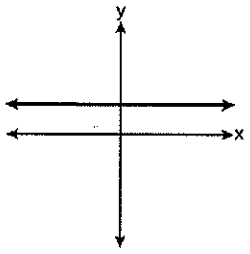


Fails the V.L.T

3)

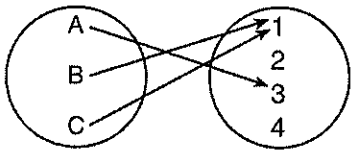


4)

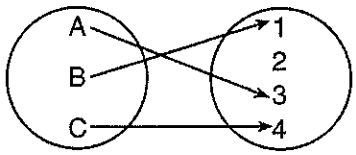


4. Which diagram represents a relation that is *not* a function?

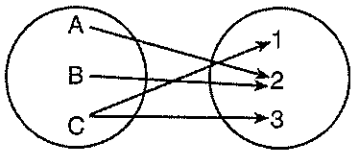
1)



2)

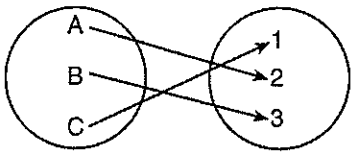


(3)



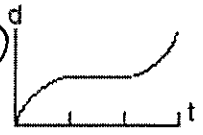
x-value(c) repeats

4)

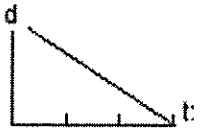


5. A bug travels up a tree, from the ground, over a 30-second interval. It travels fast at first and then slows down. It stops for 10 seconds, then proceeds slowly, speeding up as it goes. Which sketch best illustrates the bug's distance (d) from the ground over the 30-second interval (t)?

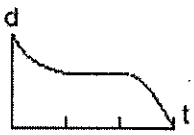
(a)



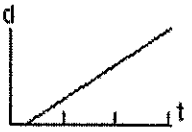
b)



c)



d)



6. For the following coordinate points, state the **domain and range**, if they **represent a function**. Justify your answer.

a) { (1,2) (4,4) (5,-6) (7,-8) (9,-9) }

Domain: $\{1,4,5,7,9\}$

Range: $\{2,4,-6,-8,-9\}$

Its a Function b/c x-values do NOT repeat.

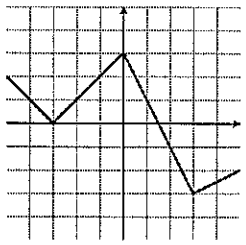
b) {(-4,7) (6,3) (-3,1) (-4,2) (-8,-4) }

Domain: $\{-4,6,-3,-8\}$

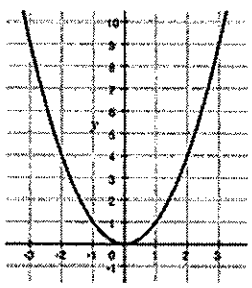
Range: $\{7,3,1,2,-4\}$

No its Not a function b/c the x-values repeat!

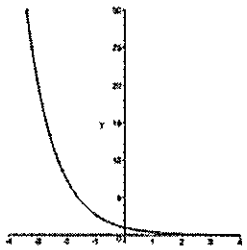
7. Given the graphs below, identify each type of function.

a) 

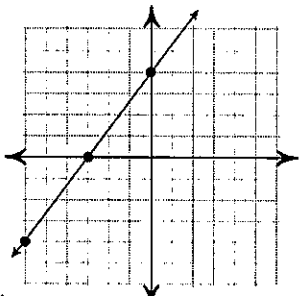
Piecewise Linear

b) 

quadratic (parabola)

c) 

exponential decay

d) 

Linear

8. Given the equations below, identify each type of function.

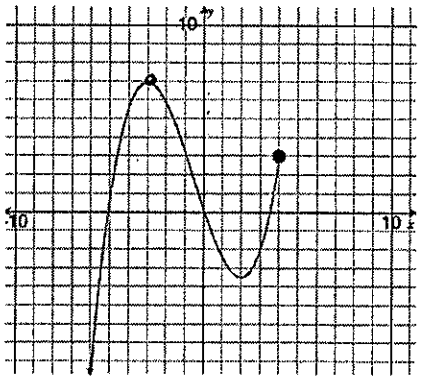
a) $y = x + 2$ Linear

b) $y = |x + 2|$ absolute value

c) $y = x^2$ quadratic

d) 4) $y = 2^x$ exponential growth

9. Directions-For the following graphs, state the **domain and range**, a) in set builder and b) in interval notation and c) determine if the graph **represents a function.**

a) 

Domain:

a) $\{x \mid x \leq 4\}$

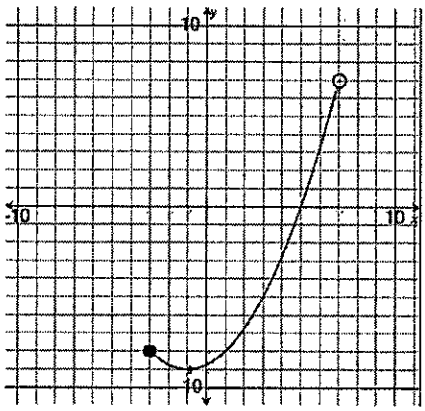
b) $(-\infty, 4]$

Range:

a) $\{y \mid y \leq 7\}$

b) $(-\infty, 7]$

Function? yes because it passes the V.L.T.

b) 

Domain:

a) $\{x \mid -3 \leq x < 7\}$

b) $[-3, 7)$

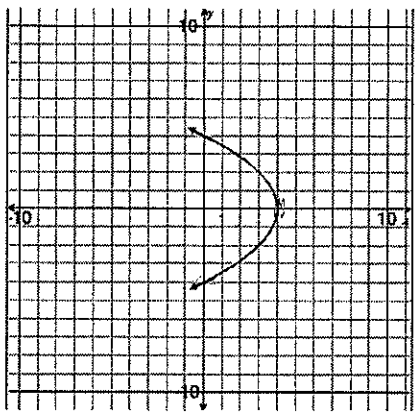
Range:

a) $\{y \mid -9 \leq y < 7\}$

b) $[-9, 7)$

Function? yes because it passes the V.L.T.

c)



Domain:

a) $\{x \mid x \leq 4\}$

b) $(-\infty, 4]$

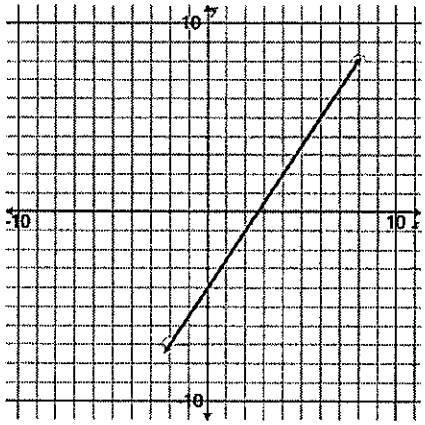
Range:

a) $\{y \mid y \in \mathbb{R}\}$

b) $(-\infty, \infty)$

Function? No because it fails the V.L.T. hits graph twice!

d)



Domain:

a) $\{x \mid x \in \mathbb{R}\}$

b) $(-\infty, \infty)$

Range:

a) $\{y \mid y \in \mathbb{R}\}$

b) $(-\infty, \infty)$

Function? yes because it passes the V.L.T

10. Given the tables, evaluate the following:

x	1	2	3	4	5
f(x)	3	4	5	6	7

x	3	4	5	6	7
g(x)	4	6	8	10	12

a) $f(1)$ $y=3$ b. $f(x)=6$ $x=4$ c) $g(7)$ $y=12$ d) $g(x)=10$ $x=6$

11. If $f(x)=2x-1$ evaluate the following

a) $f(5)$ $2(5)-1$ $10-1$ $y=9$

b) $f(-3)$ $2(-3)-1$ $-6-1$ $y=-7$

c) $f(x)=5$ $5=2x-1$ $+1 \quad +1$ $6=2x$ $x=3$

12. If $f(x)=x^2+2$ evaluate the following

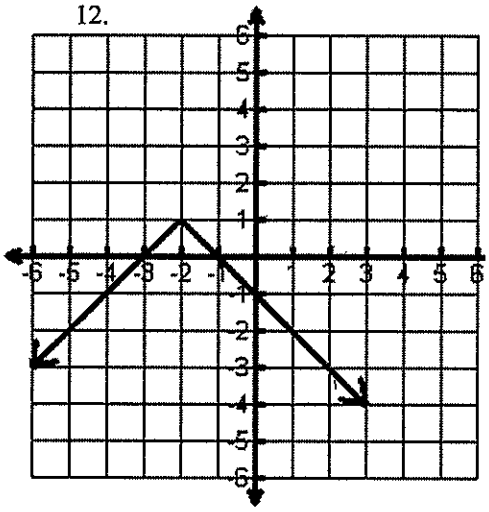
a) $f(6)$ $(6)^2+2$ $36+2$ $y=38$

b) $f(-7)$ $(-7)^2+2$ $49+2$ $y=51$

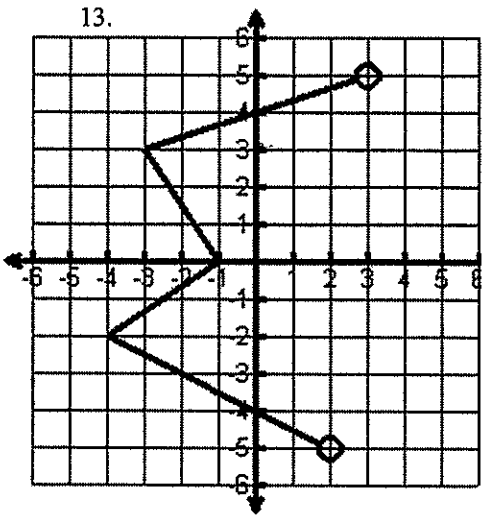
c) $f(x)=18$ $18=x^2+2$ $-2 \quad -2$ $\sqrt{16}=\sqrt{x^2}$ $x=\pm 4$

Directions- For questions 12-14 for each of the given graphs evaluate the following.

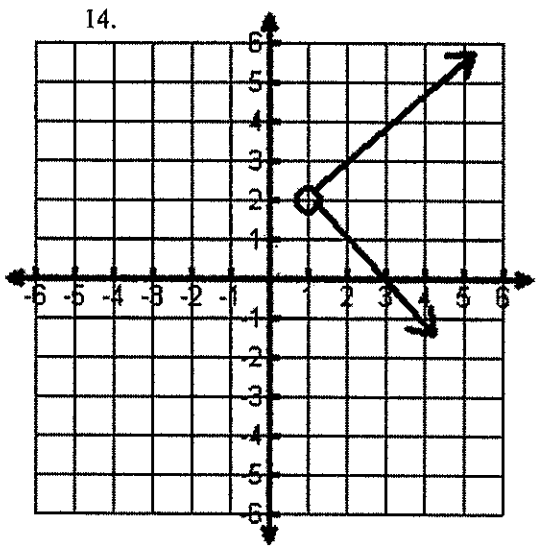
12.



13.



14.



a) $f(2)$ $y=$ -3

b) $f(-2)$ $y=$ 1

c) $f(x)=1$ $x=$ -2

d) $f(x)=-1$ $x=$ 0 and -4

e) $f(-4)$ $y=$ -2

f) $f(3)$ No solution

g) $f(x)=3$ $x=$ -3

h) $f(x)=5$ No solution

i) $f(2)$ $y=$ 1 and 3

j) $f(1)$ No solution

k) $f(x)=3$ $x=$ 2

l) $f(x)=1$ $x=$ 2

15. Given the table below, identify which function represents the table.

x	y
0	0
1	5
2	8
3	9
4	8
5	5
6	0

T.P.

(parabola)

Explain your answer: Quadratic, b/c the y-values are symmetric and there is a turning point.

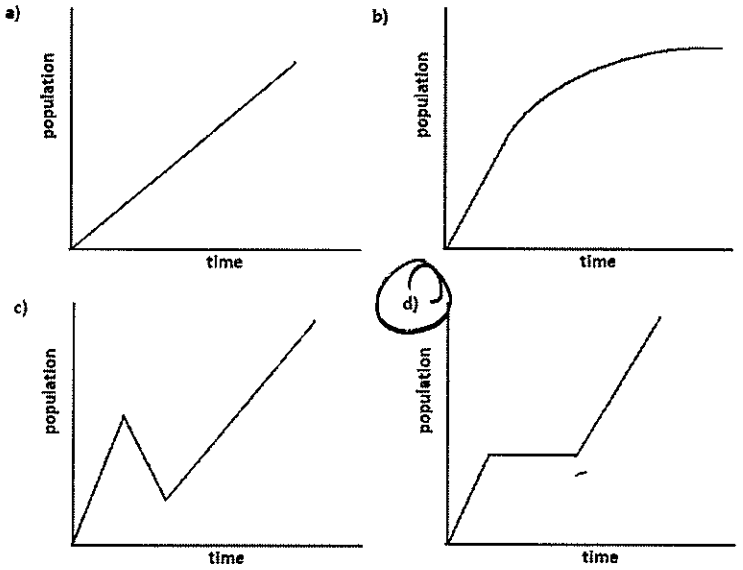
16. Given the table below, identify which function represents the table.

x	y
1	2
2	4
3	8
4	16
5	32
6	64

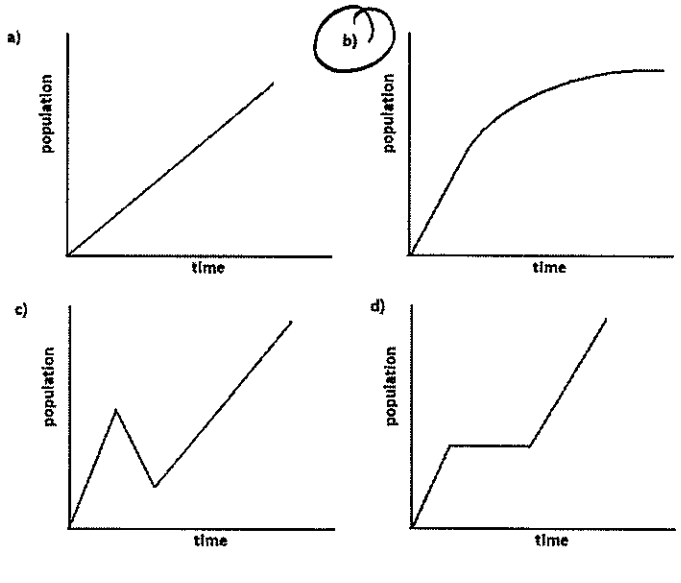
·2 ·2 ·2 ·2 ·2

Explain your answer: Exponential growth b/c you have a common ratio of 2.

17. Directions- select the graph which corresponds to the story described below. The population size grows at a constant rate for some time, then doesn't change for a while, and then grows at a constant rate once again.



18. Directions- select the graph which corresponds to the story described below. The population size grows somewhat fast at first, and then the rate of growth slows.



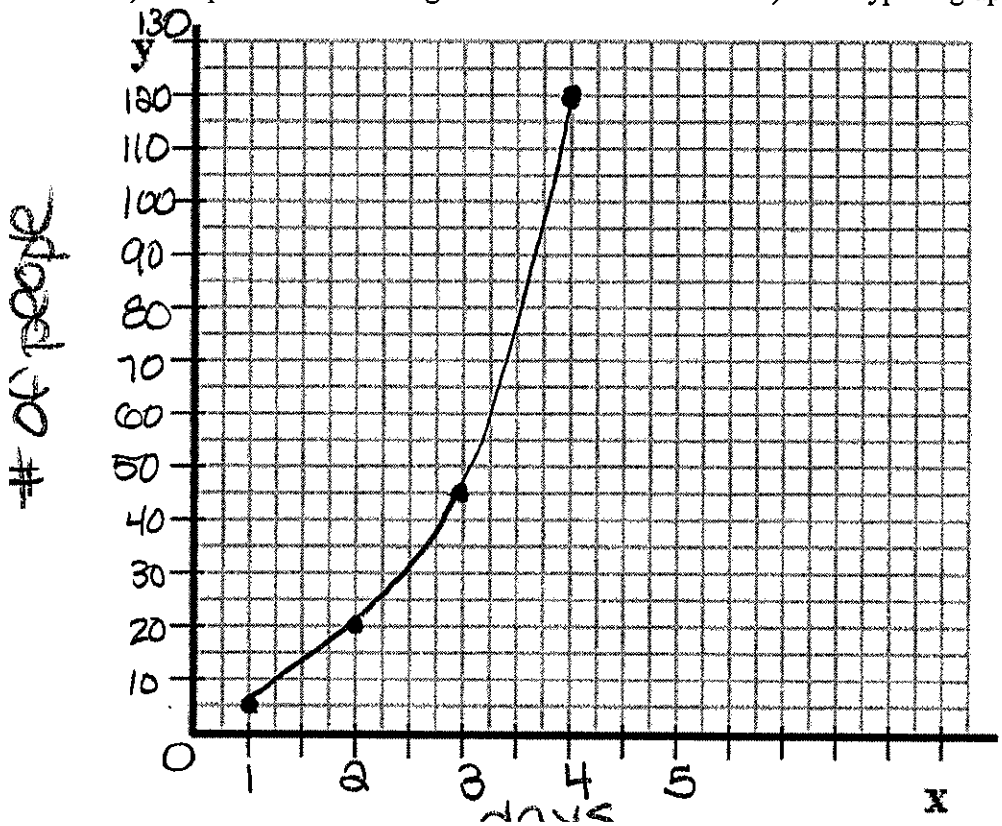
19. Larry, Moe and Curly spend their free time doing community service projects. They would like to get more involved. They began by observing the number of people who show up to the town cleanup activities each day. The data from their observations is recorded in the given table for the Great Four Day Cleanup.

a) Give a verbal description of what the x and y values in the table represent.

X value represents the days and the y-value represents the number of people who show up.

x	y
1	5
2	20
3	45
4	120

b) Graph the data on the grid below.

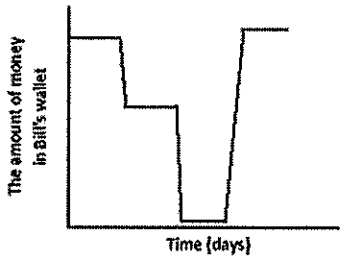


c) What type of graph is this?

Exponential growth.

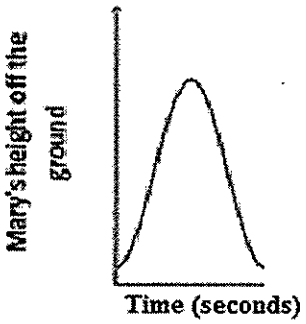
20. Given the graphs below, describe a story that best represents the function.

a)



Bill started with a certain amount of money then he had some bills due one day. He didn't spend any the following day. Then he went shopping and spent almost all his money. The next day he got paid so he had more money in his wallet and then he didn't spend any.

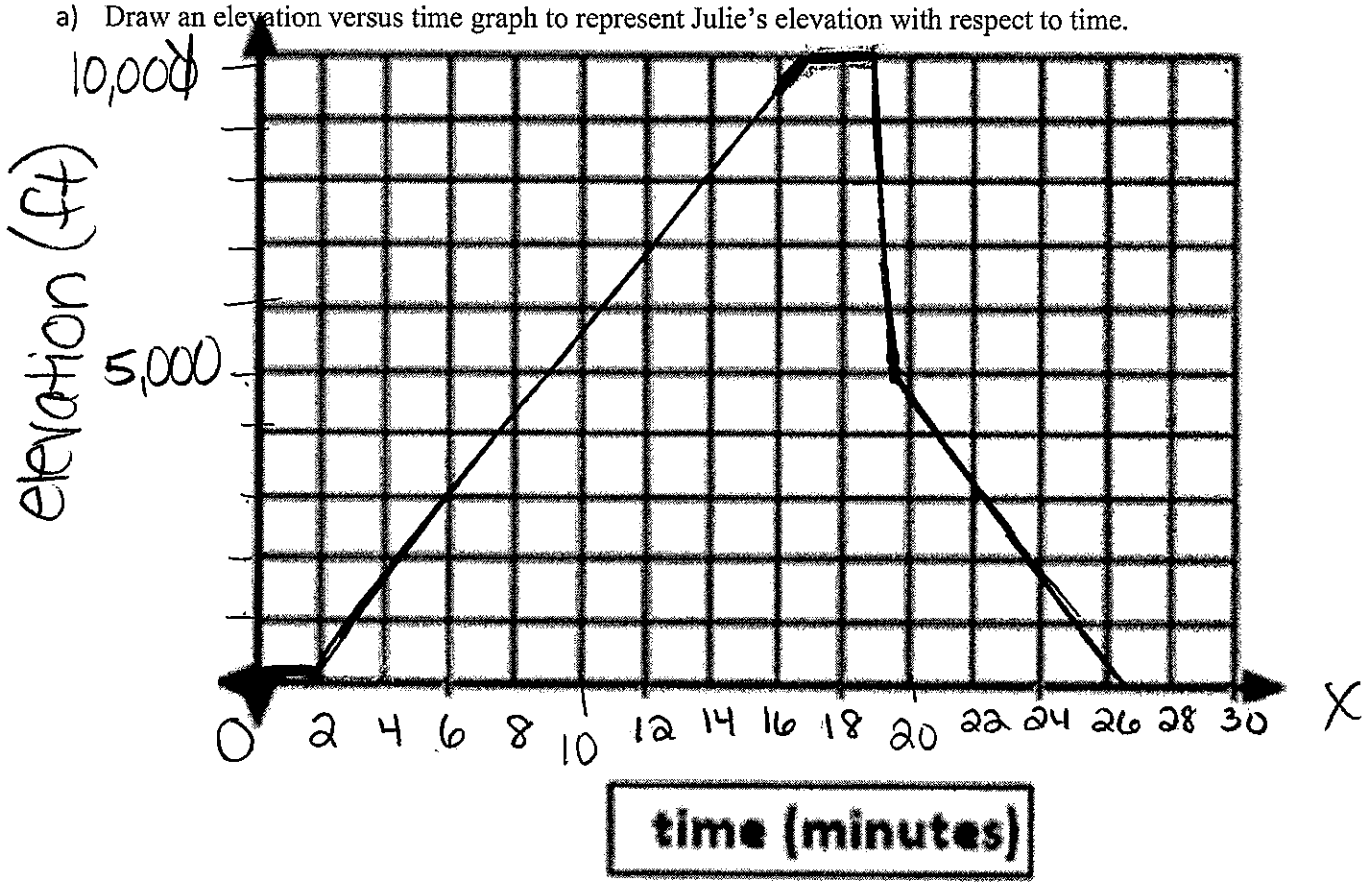
b)



Mary was standing on a trampoline. She jumped up and was at her highest point then landed back on the trampoline.

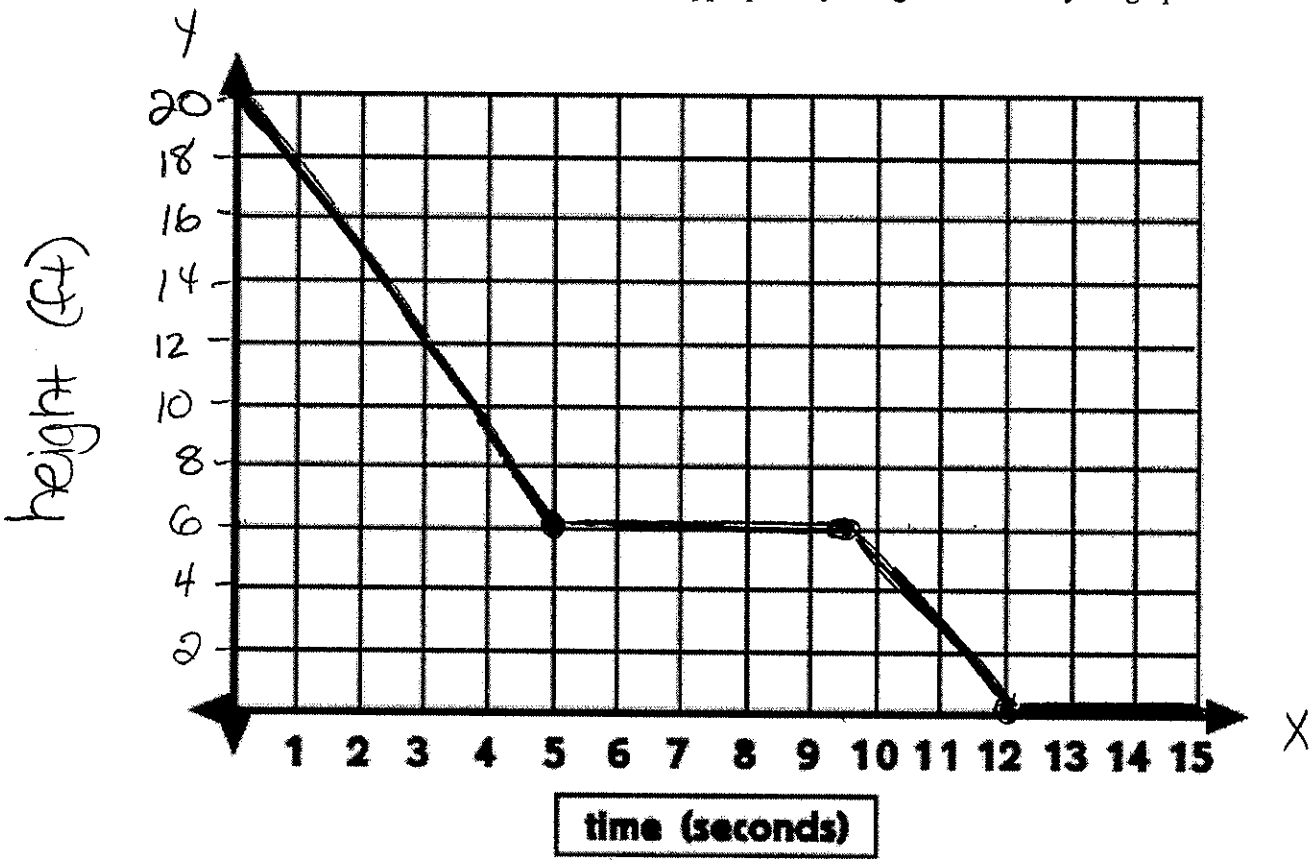
21. Consider the following story about skydiving: Julie gets into an airplane and waits on the tarmac for 2 minutes before it takes off. The airplane climbs to 10,000 feet over the next 15 minutes. After 2 minutes at that constant elevation, Julie jumps and free falls for 45 seconds until she reaches a height of 5,000 feet. Deploying her chute, she slowly glides back to Earth over the next 7 minutes where she lands gently on the ground.

a) Draw an elevation versus time graph to represent Julie's elevation with respect to time.



22. A man climbing down a ladder that is 20 feet high. At zero seconds, his shoes are at 20 feet above the floor, and at 5 seconds, his shoes are at 6 feet. From 5 seconds to the 9.5 second mark, he drinks some water on the step 6 feet off the ground. Afterward drinking the water, he takes 2.5 seconds to descend to the ground and then he walks into the kitchen. .

(a) Draw your own graph for this graphing story. Use straight line segments in your graph to model the elevation of the man over different time intervals. Label your y -axis appropriately and give a title for your graph.



23. Answer the following questions based on the piecewise function graph below.

rate = $\frac{\text{distance}}{\text{time}}$

a) What was the average rate of change of the person's elevation between time 0 seconds and 2 seconds?

$r = \frac{d}{t}$ $r = \frac{5}{2}$ $r = 2.5$

b) What was the average rate of change of the person's elevation between time 2 seconds and 4 seconds?

$r = \frac{d}{t}$ $r = \frac{0}{2} = 0$

c) What was the average rate of change of the person's elevation between time 4 seconds and 6 seconds?

$r = \frac{d}{t}$ $r = \frac{-8}{2}$ $r = -4$