Functions Review

Name _____ **Period**_____

For problems 1 and 2, use the parent functions $f(x) = x^2$ and $g(x) = |x|$

1. **Consider the function:**

$$h(x) = -2(x+1)^2 + 3$$

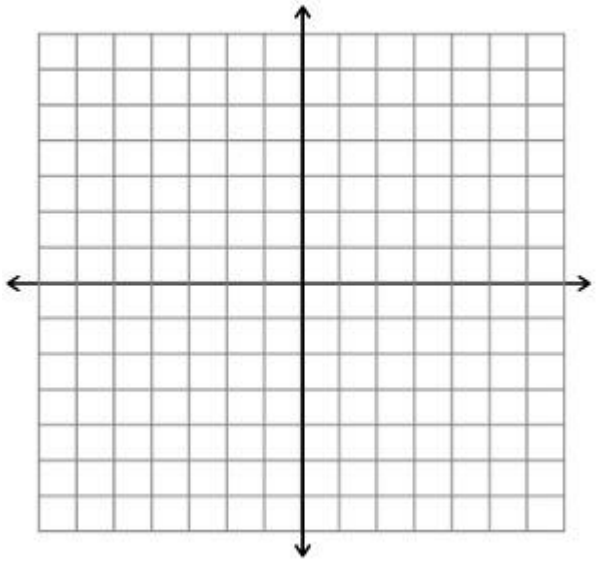
a. Graph $h(x)$ on the right.

b. Write function notation for $h(x)$ based on its parent function.

c. Describe in words what the transformation $h(x)$ does to its parent function.

d. Evaluate $h(-2)$

e. Evaluate $h(3)$



2. **Consider the function:**

$$k(x) = 3|x-2| + 1$$

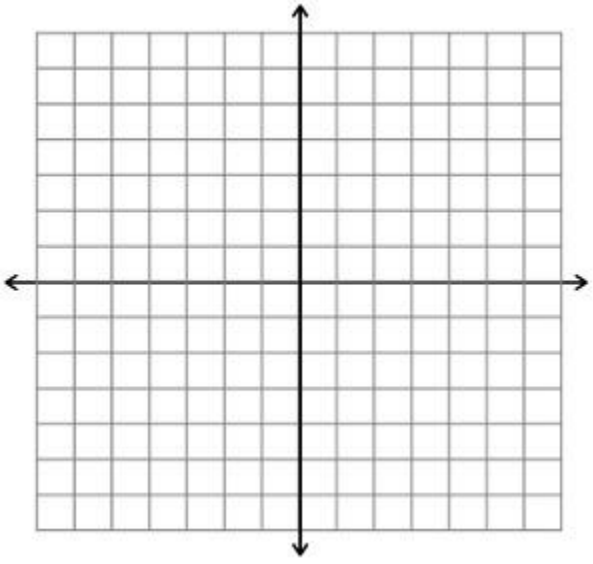
a. Graph $k(x)$ on the right.

b. Write function notation for $k(x)$ based on its parent function.

c. Describe in words what the transformation $k(x)$ does to its parent function.

d. Evaluate $k(-2)$

e. Evaluate $k(3)$



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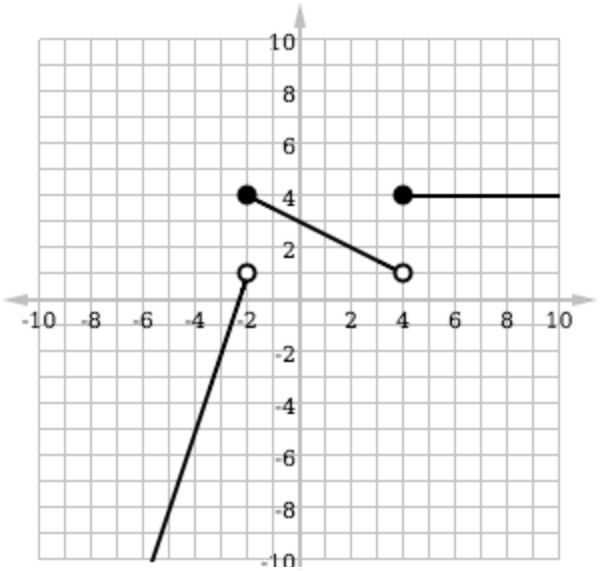
For 3-6, find/graph the equations, then list their domains and ranges.

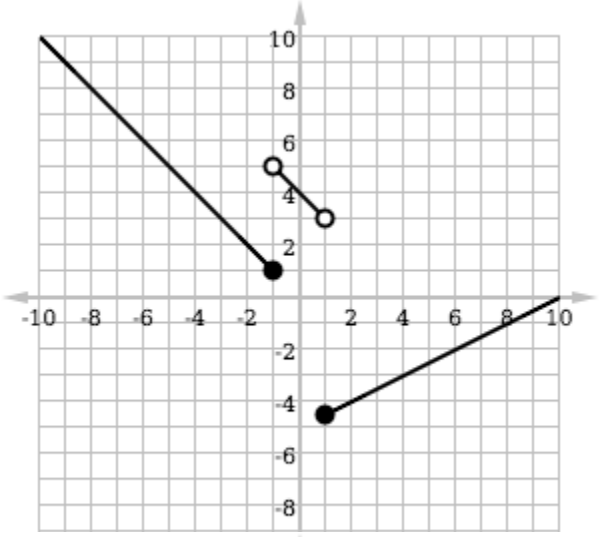
3.
Equation:



Domain:

Range:

4.
Equation:

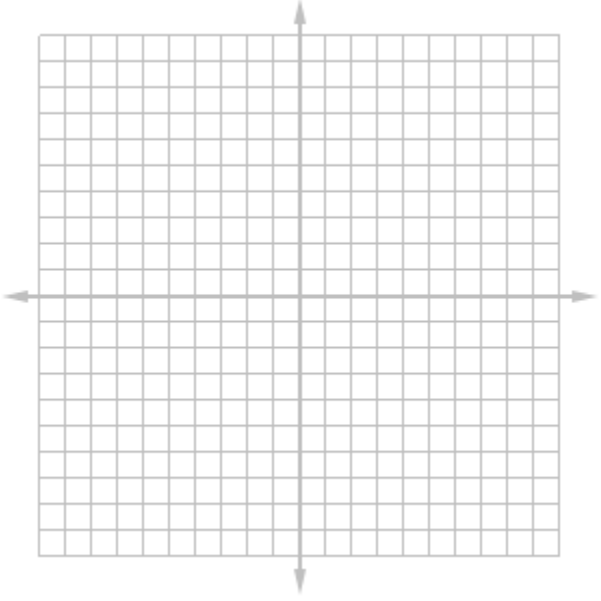


Domain:

Range:

5.
Equation:

$$W(x) = \begin{cases} -2x & x \le -2 \\ -2 & -2 < x < 4 \\ -x+4 & x \ge 4 \end{cases}$$



Domain:

Range:

W(2)=

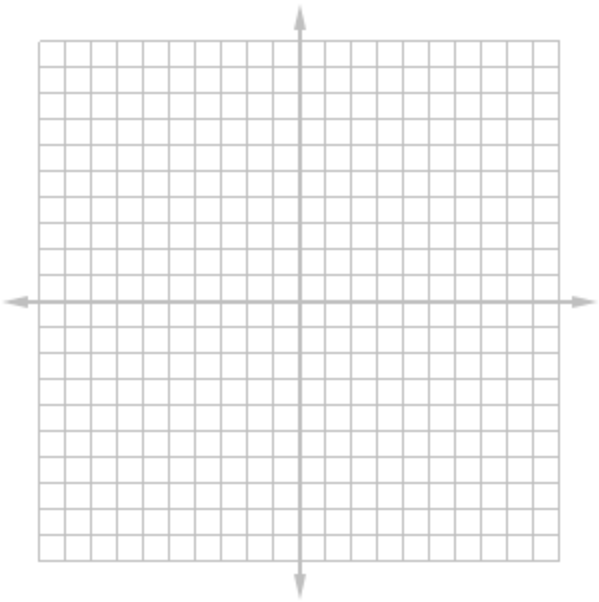
W(6)=

Functions Review

6.

Equation:

$$P(x) = \begin{cases} -4 & x < -2 \\ 1 & -2 \le x \le 4 \\ 5 & x > 4 \end{cases}$$



Domain:

Range:

P(2)=

P(6)=

7. A container holds 100 grams of radioactive pink play-doh which decays at a rate of 2.7% each year.

a. Write an equation that models the amount of radioactive play doh.

b. What is the rate?

c. What is the factor?

d. Is it growing or decaying?

8. A famous hamster's worth (in dollars) after *t* years can be found by the equation $H(t) = 9000(.78)^t$. Write a sentence that describes the hamster's initial value and growth/decay pattern. Be sure to use the growth/decay rate in your sentence.

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9. You just won the 142nd Annual Westminster Kennel Club Dog Show and were awarded the grand prize of $50. There are 4 banks in your area you are considering investing your newfound fortune in.

Bank A: Offers an interest rate of 1.5% compounded twice each year.
Bank B: Offers an interest rate of 3.1% compounded once each year.
Bank C: Offers a flat rate of $2.00 each year.
Bank D: Offers an interest rate of 8.6% every 3 years.

a. For each bank, write an equation for the amount of money you will have in *t* years.

b. For each exponential banks, determine the yearly rate that is equivalent to the bank's given rate.

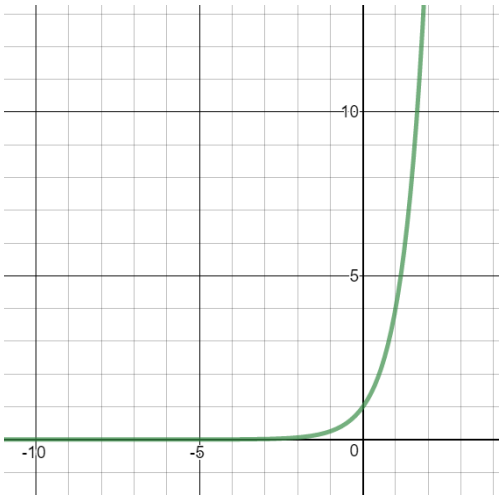
c. Which bank would be best to invest in if you were only investing for 1 year?

d. Which bank would be best to invest in if you were investing for 10 years?

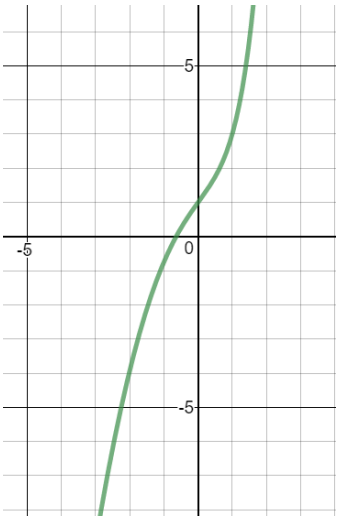
Functions Review

Identify what kind of relationships (exponential, linear, quadratic, or other) represented in the functions below.

10.



11.



Identify what kind of relationships (exponential, linear, quadratic, or other) represented in the functions below.

12. $g(x) = 7^x$

13. $h(x) = x^2 + 7x + 2$

14.

x	y
6	40
7	41.6
8	43.2

15.

x	y
1	3
4	6
7	12

16.

x	y
4.5	1
5	0.75
5.5	0.563
6.0	0.422

17.

x	y
1	2
2	5
3	10
4	17