

Name Key

Date _____

The tables below each represent a different function. Use these functions to answer questions 1 – 5.

f(x)

x	-2	-1	0	1	2
f(x)	9	5	1	-3	-7

-4 -4 -4 -4

g(x)

x	-2	-1	0	1	2
f(x)	0.25	1	4	16	64

x4 x4 x4 x4

h(x)

x	-2	-1	0	1	2
f(x)	5	3	3	5	9

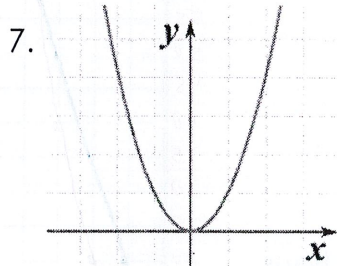
-2 0 +2 +4

1. What is the equation of the exponential function?
g(x) - multiplying by a common ratio
2. Which function is a quadratic?
h(x) - y-value go down then up
3. What is the equation of the linear function?
f(x) - adding a common difference
4. Which function has a common difference?
f(x)
5. Which function has a common ratio?
g(x)

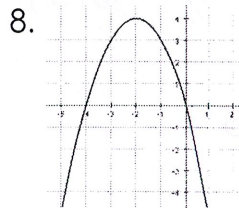
Are the following functions even, odd, or neither?

6. $f(x) = 7x^2 + 5x^1$

Neither



Even



Neither

9. $g(x) = 7x^4 - 1x^0$

Even

Domain: $(-\infty, \infty)$

Range: $[-4, \infty)$

Increasing: $(2, \infty)$

Decreasing: $(-\infty, 2)$

A.O.S.: $x=2$

Vertex: $(2, -4)$

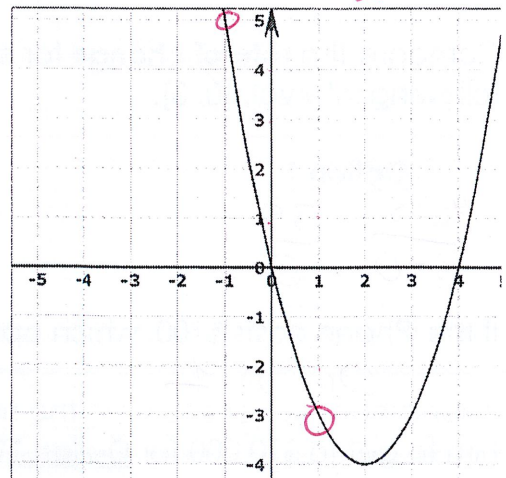
x-intercept(s): $(0, 0)(4, 0)$

y-intercept(s): $(0, 0)$

End behavior: $x \rightarrow -\infty, y \rightarrow \infty$

$x \rightarrow \infty, y \rightarrow \infty$

Rate of Change $[-1, 1] = \frac{-3 - 5}{1 - (-1)} = \frac{-8}{2} = -4$



Explain which type of function (linear, exponential, or quadratic) or sequence (arithmetic or geometric) you would write for the following scenarios. Then, explain why that is the best

- a. On the first day of the week, Dexter rides his mountain bike for 5 miles. To prepare for his tournament this weekend, he adds 3 more miles to his ride each day.

Linear / Arithmetic - Dexter is adding the same amount every day

- b. Cameron starts the band season practicing 32 hours a week. As the season comes to an end, Mr. Erwin reduces practice time by half each week.

Exponential / Geometric - Mr. Erwin is multiplying the practice time by the same amount each week.

- c. David is getting ready for soccer season. He asks Gabe to record the height of the ball after he kicks it into the air. After 2 seconds, it has reached a maximum height of 60 feet.

Quadratic - The ball is going to go up, then come back down

Jonathan is trying to decide how he wants to save for a new iPhone. His parents tell him that they will give him \$5 to start with, but he has two options for saving money.

Option 1: Every week the previous amount will double.

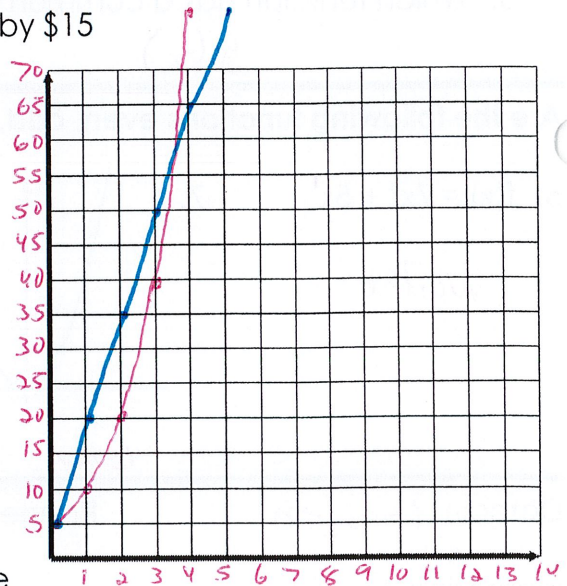
Option 2: Every week the previous amount will increase by \$15

10. Write a function for each option.

Option 1: $D(x) = 5(2)^x$ or $10(2)^{x-1}$

Option 2: $A(x) = 15x + 5$

11. Graph each function and label the two functions.
(Hint: Scale the y's by fives)



12. Compare the **rate of change** for each option, for the following interval, [0, 3].

Option 1:
 $\frac{40-5}{3-0} = \frac{35}{3}$

Option 2:
 $\frac{50-5}{3-0} = \frac{45}{3} = 15$

Between 0 and 3, option 2 had a higher rate of change.

13. If the iPhone costs \$100, which option should he choose?

Option 1

14. If Jonathan decides to save the money for college instead, how long would it take him to get to \$10,000 for **Option 1**? *Used table → 10-11 years*