

Practice

Form G

Comparing Linear and Exponential Functions

Determine whether each table or rule represents a linear or an exponential function. Explain.

1.

x	1	2	3	4
y	6	10	14	18

2.

x	1	2	3	4
y	9	36	144	576

3. $y = 2 \cdot 5^x$

4. $y = 2 \cdot 5x$

5.

x	-2	0	2	4
y	0.25	1	4	16

6.

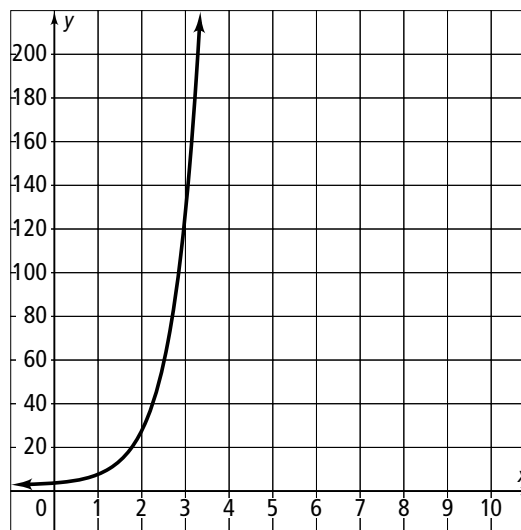
x	2	3	4	5
y	37	44	51	58

7. $y = 6x - 7$

8. $y = 3 \cdot 0.7^x$

Can you model the situation by a *linear function* or an *exponential function*? Explain.

9. Kioko's score increased by 10 points each time she played a video game.
10. The value of Drew's car decreases by 6% each year.
11. The population of a pack of wolves has been increasing annually by $\frac{1}{8}$.
12. Each week, Jimi practices his guitar for one hour longer than he did the week before.
13. Graph the function $y = 5^x + 3$ over the domain $0 \leq x \leq 6$. Find the average rate of change over the intervals $0 \leq x \leq 2$, $2 \leq x \leq 4$, and $4 \leq x \leq 6$. Describe what you observe.



Practice (continued)

Form G

Comparing Linear and Exponential Functions

State whether the equation represents an *exponential function*, a *linear function*, or *neither*.

14. $y = 0.35 \cdot 2^x$

15. $f(x) = 2 \cdot x^5$

16. $f(x) = 4 + 8x$

17. $y = 0.19x$

18. $f(x) = 23 \cdot x^2$

19. $f(x) = 0.19x$

20. What is the average rate of change for the function $g(x) = 4x + 3$ over the intervals $0 \leq x \leq 2$, $2 \leq x \leq 4$, and $4 \leq x \leq 6$? Describe what you observe.

21. What is the average rate of change for the function $g(x) = 4 \cdot 3^x$ over the intervals $0 \leq x \leq 2$, $2 \leq x \leq 4$, and $4 \leq x \leq 6$? Describe what you observe.

22. **Reasoning** Ronald wants to invest his summer savings. He has \$300 to invest, and two investments to choose from. For any month t , the balance of Investment A is given by the function $f(t) = 11t + 300$, and the balance of Investment B is given by the function $g(t) = 300 \cdot 1.036^t$. He built this table to compare the balances over a period of 8 months.

Time (months)	Initial Balance	1	2	3	4	5	6	7	8
Investment A (dollars)	300	311	322						
Investment B (dollars)	300	311	322						

- Complete the table of balances *to the nearest dollar* for Months 3–8.
- Which investment should Ronald choose and why?