

5.4.D1 – REFLECTIONS OF EXPONENTIAL FUNCTIONS

Identify whether $g(x)$ is a reflection about the x -axis or y -axis. Refer to the 5.4 example “Reflecting Exponential Functions Vertically & Horizontally Using Coordinate Notation” in the Chapter 5 Summary.

1. $f(x) = 2^x$
 $g(x) = -2^x$

2. $f(x) = 2^x$
 $g(x) = 2^{-x}$

3. $f(x) = 3^x + 7$
 $g(x) = 3^{-x} + 7$

4. $f(x) = 4^x - 3$
 $g(x) = -(4^x - 3)$

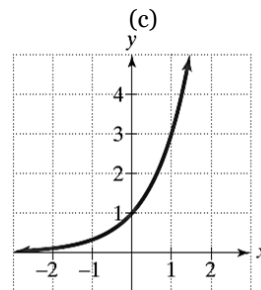
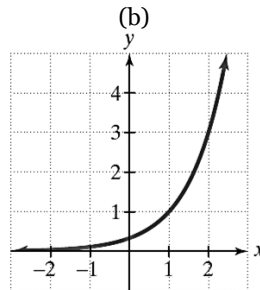
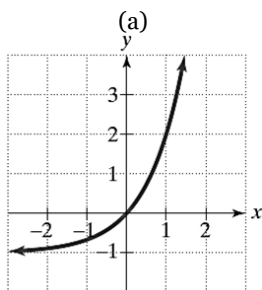
Identify the transformation – translation or reflection – required to transformation $f(x)$ to $g(x)$.

5. $f(x) = 8^x$
 $g(x) = -8^{x+2}$

6. $f(x) = 9^x$
 $g(x) = 9^{-x} + 4$

Identify the transformations – translations or reflections – made to the graph of the function $y = 3^x$ and then match the function with its graph.

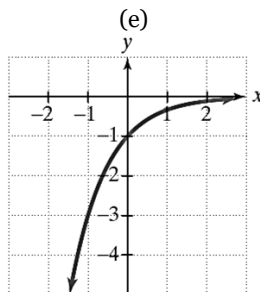
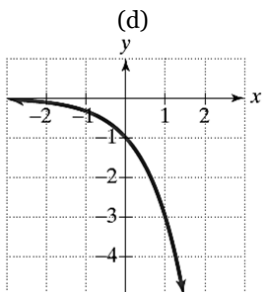
7. $f(x) = 3^x$
 No transformations



8. $g(x) = 3^{x-1}$

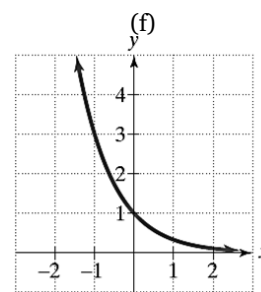
9. $h(x) = 3^x - 1$

10. $F(x) = -3^x$



11. $G(x) = 3^{-x}$

12. $H(x) = -3^{-x}$



13. The points $(-3, -2.5)$, $(-1, -1)$, $(0, 1)$ & $(2, 13)$ are on the graph of f . Which points are on the graph of the reflection of the graph f across the x -axis and which are on the graph of the reflection of the graph f across the y -axis?

	x -axis	y -axis	Neither		x -axis	y -axis	Neither
$(-3, 2.5)$				$(3, -2.5)$			
$(-2, -13)$				$(-2, 13)$			
$(2, -13)$				$(1, -1)$			
$(0, -1)$				$(1, 1)$			

14. Tyler recently purchased a new car for \$55,000. He also purchased a vintage older car for \$30,000. The new car will start depreciating the minute he drives it off the lot and will decrease in value by 10% each year. Because the older car is a collector's item, it will increase in value by 5% each year. Complete the table to show the values of the cars after t years. Refer to the 5.2 example "Writing & Solving Equations for Population Problems" in the Chapter 5 Summary.

Time (years)	Value of New Car	Value of Old Car
t	FUNCTION:	FUNCTION:
1		
5		
10		

15. Carrie is considering depositing \$1,480 into an account that pays compound interest. How much will be in her account if the interest rate is 1.9% for ten years? Refer to the 5.1 examples "Writing & Solving Simple Interest & Compound Interest Equations" in the Chapter 5 Summary.
16. The expenses for a company this year were \$74,000. Write a linear function, $y = mx + b$, or an exponential function, $y = a(b)^x$, that represents the company's expenses as a function of time in years for each situation.
- Expenses increases at a rate of \$23,000 per year
 - Expenses increase at a rate of 2.3% per year
 - Expenses decrease at a rate of 1.7% per year
 - Expenses decrease at a rate of \$17,000 per year

Write a system of equations to represent each situation. Solve each system of equations using the appropriate method: either substitution or linear combinations. Write your solution as an ordered pair (x, y) . Refer to the 6.3 example "Writing a Linear System of Equations to Represent a Problem Context" in the Chapter 6 Summary.

17. After playing at an arcade, Jackie cashed in her tickets to get some prizes. She ended up with 12 assorted balloons and erasers. Each balloon required 20 tickets and each eraser required 60 tickets. She spent a total of 600 tickets. Let x = the number of balloons and y = the number of erasers.

Equation 1: _____ & Equation 2: _____

Solve the system of equations:

Interpret the solution of the linear system in terms of the problem situation.