Name: _____

5.2.D3 — EXPONENTIAL FUNCTIONS

Past due on: _____ Period: _____

Determine an exponential function of the form $y = a(r \pm 1)^t$ that satisfies the given conditions. *Refer to the 5.2 example "Writing & Solving Equations for Population Problems" in the Chapter 5 Summary.*

1. Sales of $10,000 increase by 65% each year.

2. A population of 100,000 decreases by 2% each year.

3. Your starting annual salary of $35,000 increases by 4% each year.

4. A $900 sound system decreases in value by 9% each year.

5. A stock valued at $100 decreases in value by 9.5% each year.

6. A population of 210,000 increases by 12.5% each year.

7. An item costs $4.50, and its prices increases by 3.5% each year.

Determine whether the table represents exponential growth, exponential decay, or neither.

8.

x	y
−1	50
0	10
1	2
2	0.4

9.

x	y
0	32
1	28
2	24
3	20

10.

x	y
0	35
1	29
2	23
3	17

11.

x	y
1	17
2	51
3	153
4	459

12.

x	y
5	2
10	8
15	32
20	128

13.

x	y
3	432
5	72
7	12
9	2

Simplify the expression using the power rule. Your answer cannot contain any negative exponents. *Refer to the Properties of Exponents on your Chapter 5 Summary Sheet.*

14. $(y^2)^3$

15. $(h^4)^5$

16. $(p^{-1})^5$

Simplify the expression using the power of a product rule. Your answer cannot contain any negative exponents. *Refer to the Properties of Exponents on your Chapter 5 Summary Sheet.*

17. $(3m^2)^4$

18. $(a^3 b^2)^5$

19. $(-2x^5)^4$

Simplify the expression using the power of a quotient rule. Your answer cannot contain any negative exponents. *Refer to the Properties of Exponents on your Chapter 5 Summary Sheet.*
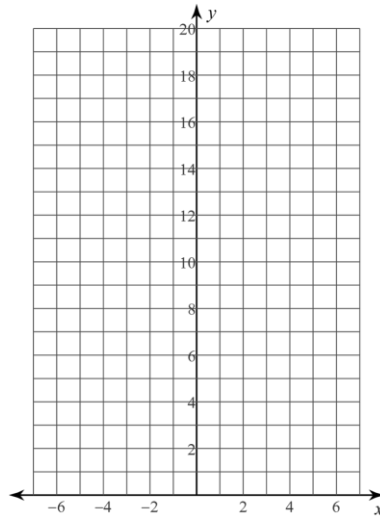
20. $\left(\dfrac{7}{w^2}\right)^3$

21. $\left(\dfrac{x^5}{3}\right)^4$

22. $\left(\dfrac{ab^2}{c^3}\right)^5$

Chapter 5: Exponential Functions

Complete each table and graph the function. Identify the x-intercept, the y-intercept, asymptote, domain, and range for the function. *Refer to the 5.2 example "Graphing & Analyzing Exponential Functions" in the Chapter 5 Summary.*

23. $f(x) = 3\left(\dfrac{1}{2}\right)^x$

x	$f(x)$
-2	
-1	
0	
1	
2	

x-intercept: _____

y-intercept: _____

asymptote: _____

domain: _____

range: _____

24. $f(x) = -\dfrac{1}{2}(4)^x$

x	$f(x)$
-2	
-1	
0	
1	
2	
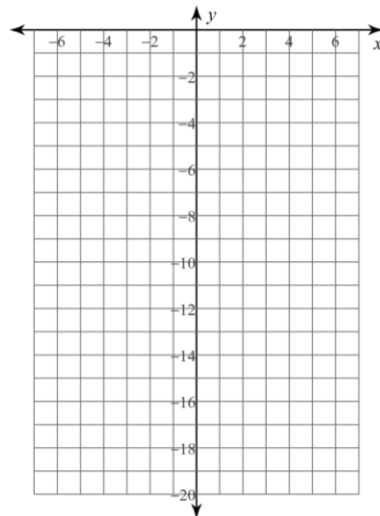
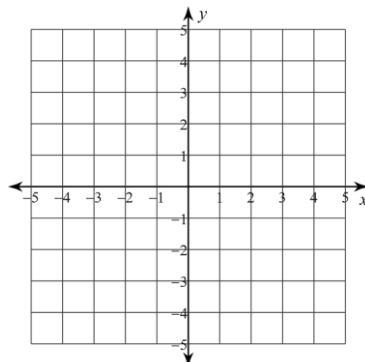x-intercept: _____

y-intercept: _____
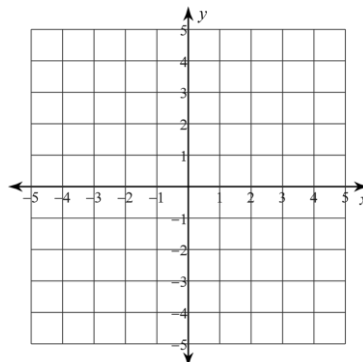
asymptote: _____

domain: _____

range: _____

Solve the system of linear equations graphically. Write your solution as an ordered pair (x, y). *Refer to the 6.1 example "Predicting the Solution of a System Using Graphing" in the Chapter 6 Summary.*

25. $\begin{array}{l} x - 2y = 6 \\ 4x - y = -4 \end{array}$

26. $\begin{array}{l} y = x + 3 \\ y = 7x - 3 \end{array}$

27. $\begin{array}{l} y = -2x + 2 \\ 1x + 2y = -2 \end{array}$

Chapter 5: Exponential Functions