Name: _____

5.3.D1 – TRANSLATIONS OF 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. The cost of tuition at a college is $12,000 and is increasing at a rate of 6% per year.

2. The value of a car is $18,000 and is depreciating at a rate of 12% per year.

3. The amount of a 10-mg dose of a certain antibiotic decreases in your bloodstream at a rate of 16% per hour.

4. The number of student-athletes at a local high school is 300 and is increasing at a rate of 8% per year.

5. The new savings account starts at $700 and increases at 1.2% yearly.

6. The value of a book is $58 and decreases at a rate of 10% per year.

Each coordinate plane shows the graph of $f(x)$. Sketch the graph of $g(x)$. Identify the y-intercept, asymptote, domain, and range for the function. *Refer to the 5.2 example "Graphing & Analyzing Exponential Functions" and the 5.3 example "Translating Linear & Exponential Functions in Terms of the Basic Function" in the Chapter 5 Summary.*
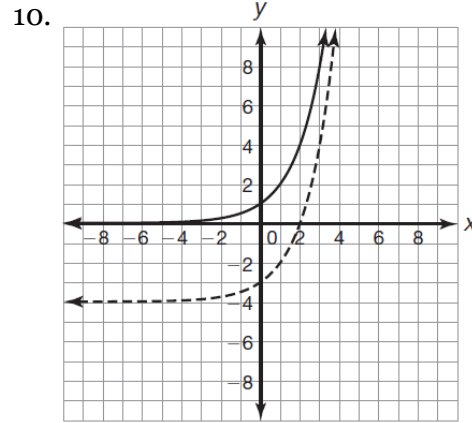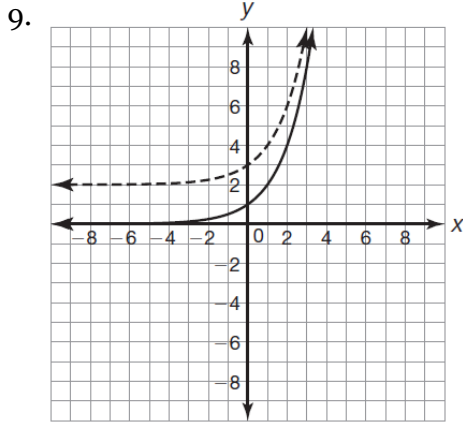
7. $g(x) = f(x) + 4$
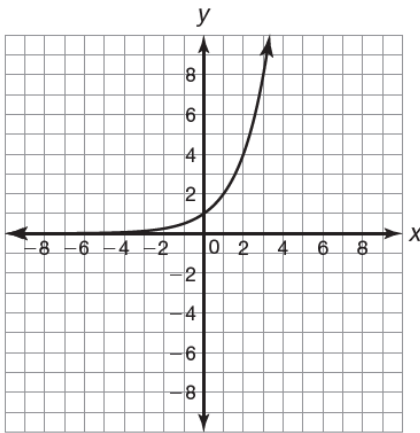
y-intercept: _____

asymptote: _____

domain: _____

range: _____

8. $g(x) = f(x) - 6$
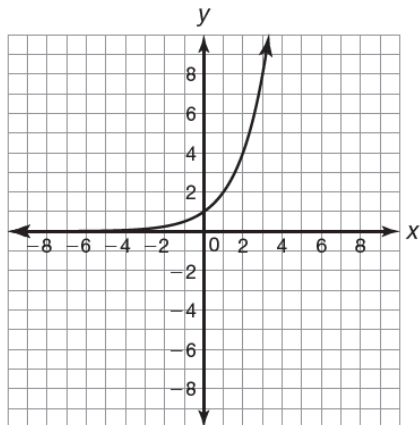
y-intercept: _____

asymptote: _____

domain: _____

range: _____

Each graph shows the function $g(x)$ as a translation of the function $f(x)$. Write the equation of $g(x)$.

9.

10.

Examine the output pattern to determine whether the situation can be represented by linear function or an exponential function.

11.

x	−1	0	1	2	3
y	−1	−0.5	0	0.5	1

12.

x	−2	−1	0	1	2
y	$\frac{1}{5}$	1	5	25	125

13.

x	1	2	3	4	5
y	512	128	32	8	2

14.

x	−5	−4	−3	−2	−1
y	12	9	6	3	0

Write an exponential function of the form $y = a(b)^x$.

15.

x	−2	−1	0	1	2
y	1	2	4	8	16

16.

x	−2	−1	0	1	2
y	5	25	125	625	3125

17.

x	−2	−1	0	1	2
y	$\frac{1}{81}$	$\frac{1}{27}$	$\frac{1}{9}$	$\frac{1}{3}$	1

18.

x	−2	−1	0	1	2
y	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2

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

19. $(-2xy^4z^2)^3$

20. $(4xyz)(x^2y^3)$

21. $(4a^2)(-2a^3)^4$