Algebra 1/ Chapter 6: Practice Test   Name:

Explorations in Core Math

1. Simplify $7^0 x^5 x^4$

2. Simplify $\sqrt{81x^8y^3}$

3. Write the radical expression $\sqrt[4]{x^9}$ in rational exponent form.

4. Write the expression $19^{\frac{7}{3}}$ in radical form.

5. Write an explicit rule for the sequence
    4, 12, 36, 108, …

6. The population of a town is currently 1200 people and is expected to quadruple every 3 years. How many people will be living there in 20 years?

7. Graph the function: $f(x) = 2^x$

8. Determine whether f is an exponential function of x of the form $f(x) = ab^x$. If so, find the constant ratio.

x	-1	0	1	2	3
f(x)	4/3	4	12	36	108

9. The table shows store sales by year. Which function models the data?

Year	0	1	2	3
Sales	6000	4200	2940	2058

10. The table gives the number of inner tubes, I, sold in a bike shop between 1978 and 1982. Determine which model best fits the data.

Year, t	1978	1979	1980	1981	1982
Tubes, I	32	46	60	74	88

11. You deposit $600 in an account that pays 6% interest compounded yearly. How much money is in the account after 6 years?

12. You buy a used truck for $24,000. It depreciates at the rate of 11% per year. What is the value of the truck after 5 years.

13. A rodent population doubles every 35 minutes. If this situation was represented by a function, what are the variables, and which variable depends on the other?

14. What is the growth rate of the function $A(t) = 3210(1 + 0.13)^t$?

15. From the table, which type of function appears to increase fastest as x gets larger and larger?

x	a(x)=5x	b(x)=5x²	c(x)=5x³	d(x)=5^x
0	0	0	0	1
1	5	5	5	5
2	10	20	40	25
3	15	45	135	125

16. Solve the equation $3 \cdot 2^x = 96$

17. Solve the equation $\frac{9}{4} \cdot \left(\frac{2}{3}\right)^x = \frac{4}{9}$

20. The table shows the number of folds of a piece of paper (n) compared to its thickness (t). Write a function to represents the situation?

number of folds	thickness (cm)
0	0.001
1	0.002
2	0.004
3	0.008
4	0.016
5	0.032
6	0.064
7	0.128

18. Write three different functions that represents exponential decay function?

21. Complete the following
   a. Describe the function $f(x) = (0.88)^x$

19. Write three different functions that have an asymptote at x=4?

   b. Describe the function $f(x) = (1.88)^x$

   c. Describe the function $f(x) = (1.22)^x$

   d. Describe the function $f(x) = (1.12)^x$

   e. Describe the function $f(x) = (0.08)^x$

   f. Describe the function $f(x) = (1.08)^x$

22. The maximum height reached by a bouncing ball is given by b(x)= 15(0.38)^x where b is the height of the ball in feet. Describe the domain of the function and what it means when x = 0.

25. Use the table below.

x	0	1	2	3
F(x)	222	232	242	252
G(x)	123	155	187	219
H(x)	222	199.8	179.82	161.838

Which are linear and which are exponential?

23. The first four terms of a sequence are given.

$10, 2, \dfrac{2}{5}, \dfrac{2}{25} \ldots$

    g. Write the recursive rule

    h. Write the explicit rule

    i. Write the nth term

24. The number of cellphones at Centennial was initially measured to be C. The number of phones is growing by 3% per day. Write an expression to represent the number of cellphones after d days?