Name: Key **Date:** **Period:**

Day 1 of 4

1. Which expression has the **greatest** value for $a = 5$, $b = -2$, and $c = 0$?

   A. a^b
   B. b^c
   C. $\frac{1}{b^{-a}}$
   D. $\frac{a^c}{b^c}$
   E. $\frac{b^c}{a^c}$

   A: $5^{-2} = \frac{1}{5^2} = \frac{1}{25}$

   B: $-2^0 = -(1) = -1$

   C: $\frac{1}{(-2)^{-5}} = (-2)^5 = -32$

   D: $\frac{5^0}{(-2)^0} = \frac{1}{1} = 1$

   E: $\frac{(-2)^0}{5^0} = \frac{1}{1} = 1$

2. Simplify the expression $-(3.14)^0$

   $= 1$

3. Simplify $(3x^2y^4)(2xy^{-1})$ $= 6x^3y^3$

4. Simplify $-2a^6 \bullet cb^{-2} \bullet b^{16} \bullet 5c^3$ $-10a^6b^{14}c^4$

5. Simplify the expression $(x^2)^5$ x^{10}

6. Simplify $\left(\frac{x^3}{x^5}\right)^{-1}$ $= \frac{x^5}{x^3} = x^2$

7. Which is **not** equivalent to n^6?

A. $n^3 \bullet n^3$ $= n^6$

B. $\frac{n^6}{n}$ $= n^5$

C. $(n^3)^2$ $= n^6$

D. $\frac{1}{n^{-6}}$ $= n^6$

E. $(n^{-1}) \bullet (n^7)$ $= n^6$

8. Find the next term in the following sequence: -6, -18, -54, ___ $= -162$

9. Given the domain $\{-2, -1, 0, 1, 2, 3\}$ and the function $f(x) = 0.75^x$ as the values of the domain increase, do the values of the range increase, decrease, or remain the same?

A. ~~increase~~

B. decrease

C. stay the same

$0.75 > 1$

So the function decreases

10. Find the balance in a checking account that has $5,000 principal earning 7% compounded annually, after 10 years.

$y = a \cdot b^x$ $x = 10$

$a = 5000$

$b = 1 + .07 = 1.07$

$y = 5000(1.07)^{10}$

$y = \$9835.76$

11. A population of 4,000,000 decreases 3.5% annually for 5 years. What is the population at the end of ~~ten~~ 5 years?

$y = a \cdot b^x$

$a = 4{,}000{,}000$

$b = 1 - .035 = .965$

$x = 5$

$y = 4000000(0.965)^5$

$y = 3347314$ people

12. Find the degree of the following polynomial.
$7x^3 + 4x^2 - 8$

TC

Degree : 3

13. Simplify $(11x^2 - 6x + 1) + (-7x^2 + 9)$

$4x^2 - 6x + 10$

14. Simplify $6x(x - 8)$

DD

$6x^2 - 48x$

15. Find the greatest common factor of the following polynomial.
$25x^4 - 30x^2 + 45x$

BD

$5x$

16. Simplify $(x-8)(x-5)$

FW FOIL

$x^2 - 5x - 8x + 40$

$x^2 - 13x + 40$

17. Simplify $(3x-8)(x^2-3x+5)$

$3x^3 - 9x^2 + 15x$

$-8x^2 + 24x - 40$

$3x^3 - 17x^2 + 39x - 40$

18. Simplify $(x-11)^2$

$(x-11)(x-11)$ FOIL

$x^2 - 11x - 11x + 121$

$x^2 - 22x + 121$