

Name _____ Date _____ Period _____

DIRECTIONS : For #1-6, simplify each expression and write your answers in the provided blanks **in exponential form**. Do not use negative exponents in your final answers.

1. $27^{-\frac{4}{3}}$

2. $-9^{\frac{5}{2}}$

3. $\left(2^{\frac{3}{4}}\right)^{-4}$

4. $(\sqrt{x^6 y^4})^3$

5. $\sqrt[5]{32a^9 b^{-15}}$

6. $\sqrt{m} \cdot \sqrt[8]{m} \div \sqrt[4]{m}$

DIRECTIONS: For #7-8, simplify each expression and write your answers in the provided blanks **in radical form**.

7. $(\sqrt{81})(\sqrt[4]{81})$

8. $(\sqrt[3]{3})(\sqrt[3]{9})$

DIRECTIONS: For #9-13, simplify each expression.

9. $(5^{\sqrt{3}})(5^{\sqrt{3}})$

10. $\sqrt[4]{3^{20\pi}}$

11. $(6^{\sqrt{7}})^{\sqrt{2}}$

12. $\frac{2^{\sqrt{5}+3}}{8}$

13. $125^{-1.3} \cdot 5^{1.9}$

DIRECTIONS: For #14-19, ***solve the equations*** for the variables that appear in them. Write your solutions in the provided blanks. Show work.

14. $5m^{\frac{-3}{4}} = 40$

15. $(2y + 3)^{\frac{3}{2}} = 27$

16. $6^x = \sqrt[7]{36}$

17. $16^{3-n} = 4$

18. $8^{w+1} = 64^{w-3}$

19. $3^x = \frac{1}{81}$

DIRECTIONS: For #20-22, use the following functions to **evaluate the operations**. Show all work.

$$f(x) = 2x$$

$$g(x) = 4x + 2$$

$$h(x) = x^2 - 1$$

20. Find $f(g(-1))$

21. Find $h(f(3))$

22. Find $g(h(x))$

DIRECTIONS: In #23, you are given a relation with five ordered pairs. Write five ordered pairs in the blank box for the **inverse relation**.

23. Given relation

x	9	5	1	-3	-7
y	2	4	6	8	10

Inverse relation

x					
y					

DIRECTIONS: For #24-25, you are given graphs of functions. Circle **YES** or **NO** to answer the following question for each graphed function: **Does this function have an inverse function?**

24. Draw a graph that **DOES** have an inverse function

25. Draw a graph that **DOES NOT** have an inverse function

DIRECTIONS: For #26-27, **find the inverse functions** ($f^{-1}(x) = ?$). Write your answers in the provided blanks. Show all work.

26. $f(x) = 2x - 5$

27. $f(x) = \frac{1}{3}x + 9$
