ANSWERS!

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

$\frac{1}{81}$

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

-243

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

$\frac{1}{8}$

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

x^9y^6

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

$\frac{2a^{9/5}}{b^3}$

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

$m^{3/8}$

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

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

27

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

3

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

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

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

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

$\mathbf{25^{\sqrt{3}}}$

$\mathbf{243^{\pi}}$

$\mathbf{6^{\sqrt{14}}}$

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

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

$\mathbf{2^{\sqrt{5}}}$

$\mathbf{\frac{1}{25}}$

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

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

$\boldsymbol{m = \frac{1}{16}}$

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

$\boldsymbol{y = 3}$

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

$\boldsymbol{x = \frac{2}{7}}$

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

$\boldsymbol{n = \frac{5}{2}}$

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

$\boldsymbol{w = 7}$

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

$\boldsymbol{x = -4}$

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 $g(h(x))$

-28

35

$4x^2 - 2$

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

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

$\boldsymbol{f^{-1}(x) = \frac{x+5}{2}}$

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

$\boldsymbol{f^{-1}(x) = 3x - 27}$