

Fractional Exponents WS

Initials: \_\_\_\_ \_\_\_\_ \_\_\_\_

Solve each equation.

1.  $5^x = 125$       2.  $10^x = 1$       3.  $x^2 = 81$       4.  $x^5 = -32$       5.  $2^x = \frac{1}{16}$

What is the value of each expression?

6.  $49^{\frac{1}{2}}$       7.  $8^{\frac{2}{3}}$       8.  $25^{\frac{3}{2}}$       9.  $100^{\frac{1}{2}}$       10.  $16^{\frac{3}{4}}$

Rewrite the following radicals into exponential form.

11.  $\sqrt{5}$       12.  $\left(\frac{1}{2}\right)^{\frac{2}{5}} = x$       13.  $\sqrt[3]{9^7}$       14.  $\sqrt[3]{w^5}$

Rewrite the following expressions into radical form. Simplify if possible.

15.  $a^{\frac{2}{3}}$       16.  $(xyz)^{\frac{1}{2}}$       17.  $(20)^{\frac{5}{4}}$       18.  $(5M)^{\frac{3}{4}}$

19. Create an unsimplified exponent expression that has an answer of  $x^{20}y^5$ .

*Review:* Simplify each expression.

20.  $b^0$       21.  $\left(-\frac{2}{3}\right)^0$       22.  $4(3.75)^0$       23.  $\frac{7s^0t^{-5}}{2^{-1}m^2}$

24.  $(4x^2y^{-5})^3$       25.  $\frac{-5m^3n^{-2}}{m^{-3}n^6}$       26.  $\left(\frac{2g}{g^{-2}h^5}\right)^3$       27.  $\left(\left(\frac{5ab}{a^{-1}}\right)^3\right)^{-1}$

28. If  $X = 1$ ,  $M = 2$ ,  $A = 3$  and  $S = -4$ , then find the value of  $(XM + AS)^2$