Algebra 2   Name_____

Rational Exponents & Radical Equations   Date_____ Period____

Write each expression in radical form.

1) $x^{\frac{3}{4}}$

2) $(5r)^{\frac{3}{2}}$

Write each expression in exponential form.

3) $\left(\sqrt[3]{4b}\right)^2$

4) $\sqrt[3]{5n}$

Simplify.

5) $625^{\frac{1}{4}}$

6) $16^{\frac{5}{4}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

7) $\left(n^{-\frac{3}{2}}n^{-\frac{2}{3}}\right)^{\frac{1}{2}}$

8) $\left(a^2\right)^{-\frac{2}{3}} \cdot a^0$

Solve each equation.

9) $6 = \sqrt{-8 - 2m}$

10) $-16 = -2\sqrt{a} - 4$

11) $-9 + \sqrt{x} = -3$

12) $4 = (-1 - 17r)^{\frac{1}{2}}$

13) $(2b)^{\frac{4}{5}} = 16$

14) $253 = (n - 30)^{\frac{5}{4}} + 10$

15) $729 = (m + 22)^{\frac{3}{2}}$

16) $16 = (3x + 22)^{\frac{2}{3}}$

17) $2(3p - 43)^{\frac{2}{5}} - 7 = 1$

18) $7 = 5 + (11n - 2)^{\frac{1}{6}}$

19) $64 = \left(\dfrac{a}{5}\right)^{\frac{3}{2}}$

20) $(a + 20)^{\frac{7}{5}} - 8 = 120$

Answers to Rational Exponents & Radical Equations

1) $\left(\sqrt[4]{x}\right)^3$

2) $\left(\sqrt{5r}\right)^3$

3) $(4b)^{\frac{2}{3}}$

4) $(5n)^{\frac{1}{3}}$

5) 5

6) 32

7) $\dfrac{n^{\frac{11}{12}}}{n^2}$

8) $\dfrac{a^{\frac{2}{3}}}{a^2}$

9) $\{-22\}$

10) $\{36\}$

11) $\{36\}$

12) $\{-1\}$

13) $\{16, -16\}$

14) $\{111\}$

15) $\{59\}$

16) $\left\{14, -\dfrac{86}{3}\right\}$

17) $\left\{25, \dfrac{11}{3}\right\}$

18) $\{6\}$

19) $\{80\}$

20) $\{12\}$