

Q4HW3 - All work on looseleaf.

Date _____ Period _____

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Write each expression in exponential form.

1) $\sqrt{2p}$

2) $\sqrt{x}$

3) $(\sqrt{10n})^5$

4) $(\sqrt[5]{2b})^8$

Write each expression in radical form.

5) $(10x)^{\frac{5}{6}}$

6) $n^{\frac{5}{6}}$

7) $(5a)^{\frac{5}{4}}$

8) $(3v)^{\frac{1}{2}}$

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

9) $3x^{-\frac{4}{3}} \cdot x$

10) $2x^0 \cdot 2x^{-1}$

11) $3n^{\frac{3}{2}} \cdot 3n^{-\frac{1}{3}} \cdot 3n^{\frac{1}{2}}$

12) $\left(k^{\frac{3}{2}}\right)^2$

13) $(p^{-2})^{\frac{1}{3}}$

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

15) $\frac{m^{-1}}{2m^{\frac{1}{2}}}$

16) $\frac{3n^{-\frac{5}{3}}}{2n^{\frac{2}{3}}}$

$$17) \frac{3r^{-\frac{3}{2}}}{2r^{\frac{3}{2}}}$$

$$18) \frac{x^{\frac{3}{2}}}{2x^{-\frac{3}{2}}}$$

Solve each equation.

$$19) 5^{-2n-2} = 25$$

$$20) 3^{3n} = \frac{1}{9}$$

$$21) 5^{-3x} = 625$$

$$22) 5^{-2v-3} = 125$$

$$23) 16^{3-3x} = \frac{1}{4}$$

$$24) 4^{-3n} = \frac{1}{64}$$

Sketch the graph of each function.

$$25) y = 2 \cdot \left(\frac{1}{3}\right)^x$$

$$26) y = 2 \cdot 3^x$$

27) The population of a city is 7500 and is increasing 2.32 percent per year. Using an exponential function, what will the population of the city be in 10 years?

28) A beehive with 10000 bees and is declining in population 1.5 percent per month. Using an exponential function, what will the population of bees in 5 years?

29) An investment of \$50000 earns 5 percent interest compounded monthly. Using an exponential function, what will be the value of the investment in 15 years?

30) A bacteria colony of 5000 is growing in population at 20 percent per day. Using an exponential function, what will be the population of bacteria in 6 months (assume 30 days per month) ?