Name _____ Date _____ Pd ___

Radicals and Rational Exponents: 5.1 – 5.2 WS

Radicals. Simplify.

1) $\sqrt[3]{-162}$ 2) $\sqrt[3]{24m^3}$ 3) $\sqrt[3]{-16a^3b^8}$ 4) $\sqrt[6]{448x^7y^7}$

Rational Exponents. Simplify.

5) $(64m^4)^{\frac{3}{2}}$ 6) $(81x^{12})^{1.25}$ 7) $(216r^9)^{\frac{1}{3}}$ 8) $\left(a^{\frac{1}{2}}\right)^{\frac{3}{2}}$

Adding & Subtracting Radicals. Simplify.

9) $-5\sqrt{3}-3\sqrt{3}$ 10) $2\sqrt{8}-\sqrt{8}$ 11) $-3\sqrt{12}+3\sqrt{3}+3\sqrt{20}$

12) $4\sqrt[6]{3}+2\sqrt[4]{32}-3\sqrt[6]{192}-2\sqrt[6]{192}$ 13) $-\sqrt[3]{320}-4\sqrt[3]{5}+2\sqrt[3]{135}+2\sqrt[3]{16}$

Dividing Radicals. Simplify.

14) $\frac{\sqrt{9}}{\sqrt{25}}$ 15) $\frac{\sqrt{4}}{\sqrt{36}}$ 16) $\frac{\sqrt{4}}{4\sqrt{5}}$ 17) $\frac{4\sqrt{2}}{3\sqrt{5}}$

Rationalizing the Denominator. Simplify.

18) $\frac{\sqrt{3}}{-1-\sqrt{5}}$ 19) $\frac{\sqrt{5}}{5+\sqrt{2}}$ 20) $\frac{2-\sqrt{3}}{-2-\sqrt{5}}$ 21) $\frac{-4+\sqrt{3}}{-1-2\sqrt{5}}$

Radical and Rational Expressions. Rewrite in the opposite form.

22) $7^{\frac{1}{2}}$ 23) $4^{\frac{4}{3}}$ 24) $2^{\frac{1}{6}}$ 25) $\left(\sqrt{10}\right)^3$ 26) $\left(\sqrt[4]{5}\right)^5$ 27) $\sqrt[6]{10}$

28) $(5x)^{-\frac{1}{2}}$ 29) $(10n)^{\frac{3}{2}}$ 30) $\left(\sqrt[3]{6x}\right)^4$ 31) $\frac{1}{\left(\sqrt{3k}\right)^5}$

Simplify Completely. No decimals and no negative exponents.

32) $9^{\frac{1}{2}}$ 33) $(9n^4)^{\frac{1}{2}}$ 34) $(x^6)^{\frac{1}{2}}$