

MATH 100
Review on Radicals and Rational Exponents

I. Evaluate.

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

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

II. Use the rules of exponents to simplify. Write answers with positive exponents only.

(3) $(9x^6y^2)^{\frac{1}{2}}$

(4) $\left(\frac{a^{-\frac{1}{2}}}{b^{-\frac{1}{4}}}\right)^{-4}$

(5) $(a^{\frac{1}{2}}b)^{\frac{1}{2}}(ab^{\frac{1}{2}})$

III. Simplify each radical expression.

(6) $\sqrt[4]{-81}$

(7) $\sqrt[3]{-48x}$

(8) $\frac{\sqrt{3}}{\sqrt{7}}$

(9) $\frac{1}{\sqrt[3]{3}}$

(10) $(2\sqrt{5} + \sqrt{2})(3\sqrt{5} - \sqrt{2})$

(11) $\sqrt{50a} + \sqrt{18a} - \sqrt{2a}$

(12) $\sqrt{63a^{15}b^7}$

(13) $\sqrt[3]{2}(\sqrt[3]{12x} - \sqrt[3]{2x})$

(14) $(3\sqrt{a} + 2)^2$

(15) $\frac{2 - \sqrt{3}}{\sqrt{2} + \sqrt{6}}$

(16) $\frac{8 - \sqrt{32}}{20}$

(17) $(2\sqrt{2}) \div (4\sqrt{10})$

IV. Write as a single radical expression.

(18) $\sqrt{3} \cdot \sqrt[4]{3}$