

Xavier University of Louisiana

Study Guide for the Xavier Mathematics Placement Test

4. Rational exponents and radicals, rationalizing denominators

Practice Problems

Rewrite the following expressions in radical form:

1. $x^{3/4} = \sqrt[4]{x^3}$

2. $y^{1/2} = \sqrt{y}$

3. $5a^{2/3} = 5\sqrt[3]{a^2}$

4. $(3t)^{1/2} = \sqrt{3t}$

Rewrite the following expressions using only positive exponents:

1. $\sqrt[3]{x} = x^{1/3}$

2. $\sqrt[5]{a^2} = a^{2/5}$

3. $\sqrt{5x} = (5x)^{1/2}$

Simplify the following expressions:

1. $(3\sqrt{2} - 1)(\sqrt{2} + 3) = 8\sqrt{2} + 3$

2. $3\sqrt{8x^3} - 2x\sqrt{18xy} = 6x\sqrt{2x} - 6x\sqrt{2xy}$

3. $3\sqrt{8x^3y} - 2x\sqrt{18xy} = 0$

Rationalize the following fractions:

1. $\frac{2\sqrt{5}}{3\sqrt{2}} = \frac{\sqrt{10}}{3}$

2. $\frac{1 + \sqrt{3}}{2 - \sqrt{3}} = 3\sqrt{3} + 5$