5. Simplify each expression.

a) $4\sqrt[3]{16} + 3\sqrt[3]{54}$ $= 4\sqrt[3]{8 \cdot 2} + 3\sqrt[3]{27 \cdot 2}$

$= 4 \cdot \sqrt[3]{8}\sqrt[3]{2} + 3\sqrt[3]{27}\sqrt[3]{2}$

$= 4 \cdot 2 \cdot \sqrt[3]{2} + 3 \cdot 3 \cdot \sqrt[3]{2} = 8\sqrt[3]{2} + 9\sqrt[3]{2}$

$\boxed{17\sqrt[3]{2}}$ +1

b) $3\sqrt{8x^2y^3} - 2x\sqrt{32y^3}$

$= 3 \cdot 2 \cdot x \cdot y\sqrt{2y} - 2 \cdot x \cdot 4 \cdot y\sqrt{2y}$ +1

$= 6xy\sqrt{2y} - 8xy\sqrt{2y} = \boxed{-2xy\sqrt{2y}}$

6. Rationalize each denominator.

a) $\frac{9}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \boxed{\frac{9\sqrt{7}}{7}}$ +1

b) $\frac{3}{\sqrt[3]{5}} = \frac{3 \cdot \sqrt[3]{5}\sqrt[3]{5}}{\sqrt[3]{5}\sqrt[3]{5}\sqrt[3]{5}} = \boxed{\frac{3\sqrt[3]{25}}{5}}$ +1

Math 108 Spring 2018

Quiz 1

Name Key

Directions: Answer each question as completely as possible. Show all work for credit. Good luck!

1. Convert $1.4\overline{8}$ into a fraction. (Show it can be written as $\frac{integer}{integer}$)

$10n = 14.888\ldots$

$n = 1.48\ldots$

$9n = 13.4$

$n = \frac{13.4}{9} = \boxed{\frac{134}{90}}$ + 1/2

2. Write each set using interval notation.

a) $-2 < x \leq 5$ $\boxed{(-2, 5]}$

b) $x > -1$ $\boxed{(-1, \infty)}$ + 1/2 or 0

3. Evaluate the following:

a) $(64 + 36)^{1/2} = 100^{1/2} = 10$ +1

b) $100^{-3/2} = \frac{1}{100^{3/2}} = \frac{1}{(100^{1/2})^3} = \frac{1}{10^3} = \boxed{\frac{1}{1000}}$ +1

4. Simplify. All answers should be written with no negative exponents.

a) $(3x^2y^3)(5xy)^2 = 3x^2y^3 \cdot 5^2x^2y^2 = \boxed{75x^4y^5}$ +1

b) $\left(\frac{2^{-6}x^{-3}}{y^{-1/2}}\right)^{-2/3} = \left(\frac{y^{1/2}}{2^{-6}x^{-3}}\right)^{2/3} = \frac{y^{1/3}}{2^{-4}x^{-2}} = \boxed{2^4x^2y^{1/3}}$ +1

$= \boxed{16x^2y^{1/3}}$ +1

c) $\frac{(3x^{-2}y^3)^3}{3x^4y^{-1}} = \frac{3^3x^{-6}y^9}{3x^4y^{-1}} = \frac{27}{3}\frac{y^{10}}{x^{10}} = \boxed{\frac{9y^{10}}{x^{10}}}$ +1