Name: _____ Date: _____

BLM 4–8

Section 4.3 Extra Practice

1. Use the exponent laws to simplify each expression.

a) $\left(x^{\frac{1}{2}}\right)\left(x^{\frac{7}{2}}\right)$

b) $\left(3m^4\right)\left(m^{\frac{1}{4}}\right)$

c) $[(x^{1.5})\,(x^{2.5})]^{0.5}$

d) $\left(\frac{5x^3}{20x}\right)^{\frac{1}{2}}$

e) $\left(x^{\frac{2}{3}}y^{\frac{4}{3}}\right)^3$

2. Simplify each expression. State the answer using positive exponents.

a) $\left(y^{-2}\right)\left(y^{\frac{5}{2}}\right)$

b) $\left(-8x^{-6}\right)^{\frac{1}{3}}$

c) $\frac{\left(x^3\right)^{\frac{1}{2}}}{\left(x^{\frac{5}{2}}\right)^{\frac{1}{5}}}$

d) $\left(\frac{x^{\frac{1}{4}}}{16x^{\frac{3}{4}}}\right)^{\frac{1}{2}}$

e) $\left(x^{\frac{1}{3}}y^{\frac{4}{5}}\right)^0\left(x^{\frac{1}{3}}\right)^6$

3. Evaluate without using a calculator. Leave each answer as a rational number.

a) $\frac{5^{-2}}{125^{\frac{1}{3}}}$

b) $\frac{9^{\frac{3}{2}}}{27^2}$

c) $\left(8^{\frac{2}{3}}\right)\left(16^{\frac{3}{2}}\right)$

d) $\left(3^{-2}\right)^{\frac{-5}{2}}$

e) $\left(125^{\frac{-1}{3}}\right)^2$

4. Evaluate using a calculator. Give the result to four decimal places, if necessary.

a) $(7^{1.2})^{-3}$

b) $\left(4^3\right)\left(4^{\frac{3}{2}}\right)$

c) $(7^3)^{\frac{2}{3}}$

d) $\left(\frac{6^2}{3^3}\right)^{\frac{1}{3}}$

e) $\left[\frac{3^2}{(-3)^4}\right]^{\frac{1}{2}}$

5. The growth of 5000 bacterium cells in a lab can be modelled using the expression $N = 5000(1.5)^{\frac{h}{40}}$, where N is the number of bacteria after h hours.

a) What does the value 1.5 in the expression tell you?

b) How many bacteria are there after 40 h?

c) How many more bacteria are there after 3 h?

d) What does $h = 0$ indicate?