Check Your Understanding – Radical Expressions and Equations

Answer the following questions on your own paper.

1. a) For the entire radical given below:

   - state any restrictions on the values for the variables.
   - convert to a mixed radical in simplest form.

   $\sqrt[5]{64x^{10}y^{17}z^{23}}$

   b) For the mixed radical given below:

   - convert to an entire radical.
   - state any restrictions on the values for the variables.

   $2x^2y^5\sqrt[3]{7xy^2}$

2. Order the following numbers in descending order. (**Hint**: Write each expression as an entire radical.)

$$2\sqrt[3]{5} \qquad \sqrt[3]{21} \qquad -4\sqrt[3]{2} \qquad 3\sqrt[3]{2}$$

3. Determine the perimeter of the rectangle. Show your work. Express your answer as a radical in simplest form. Do NOT express your answer as a decimal.

$\sqrt{75} + \sqrt{32}$

$\sqrt{27} - \sqrt{8}$

4. Simplify.

   a) $5\sqrt{54} - \sqrt{200} + 3\sqrt{24} - \frac{2}{3}\sqrt{18} + \frac{1}{2}\sqrt{64}$

   b) $2\sqrt{3}(7\sqrt{8} - 4\sqrt{6})$

   c) $\frac{15\sqrt{84}}{-18\sqrt{12}}$

   d) $\frac{\sqrt{3}-9}{2\sqrt{6}}$

   e) $\frac{2\sqrt{15}}{\sqrt{5}-3\sqrt{3}}$

   f) $\frac{2\sqrt{5}-3\sqrt{3}}{4\sqrt{2}+6\sqrt{3}}$

5. Solve the following radical equations. State restrictions on the variable, verify possible solutions, state solutions and identify any extraneous roots.

   a) $\sqrt{72 + 2x} + 8 = 12$

   b) $6 + \sqrt{2x - 4} = x$