Name: _____

Radical Functions

Exercise 1: Write the following expressions using rational exponents.

1) $\sqrt{5}$
2) $\sqrt[3]{10}$
3) $\sqrt{\sqrt[3]{2}+\sqrt{2}}$
4) $\dfrac{5}{\sqrt{2}}$

Exercise 2: Calculate the following roots without calculator. Check your answers by raising your results to the appropriate power.

1) $\sqrt{1\,000\,000}$
2) $\sqrt{\dfrac{9}{4}}$
3) $\sqrt{0.09}$
4) $\sqrt[3]{1\,000\,000}$
5) $\sqrt[3]{-64}$
6) $-\sqrt[4]{81}$

Exercise 3: Find the indicated roots without using a calculator.

1) The cube root of -216
2) The sixth roots of 64
3) The fifth root of -243
4) The eighth roots of $(5)^{16}$

Exercise 4: Order each set of numbers from least to greatest.

1) $\sqrt[9]{-41},\ \sqrt[3]{-41},\ \sqrt[11]{-41},\ \sqrt[5]{-41},\ \sqrt[7]{-41}$

2) $\sqrt[3]{-\dfrac{1}{2}},\ \sqrt[9]{-\dfrac{1}{2}},\ \sqrt[13]{-\dfrac{1}{2}},\ \sqrt[11]{-\dfrac{1}{2}}$

Exercise 5: For this problem, assume x is positive.

1) Name three values of x for which $\sqrt{x}$ is less than x.
2) Name three values of x for which $\sqrt{x}$ is greater than x.
3) In general, how can you tell whether $\sqrt{x}$ is greater than x?