Algebra II
Dr. Paul L. Bailey

Homework 0812
Thursday, August 12, 2021

Name:

Problem 1. Recall that

$$\mathbb{N} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R} \subset \mathbb{C}.$$

Of these sets of numbers, state the smallest set (furthest to the left) in which the given number resides. For example, $2/3$ is not an integer, but it is rational number, so it is not in $\mathbb{Z}$, but it is in $\mathbb{Q}$, so the smallest of set in which it resides is $\mathbb{Q}$.

(a) $\frac{2}{3}$

(b) 3

(c) $\sqrt{3}$

(d) $2 + 3i$

(e) $7/2$

(f) Solution to $x + 3 = 7$

(g) Solution to $x + 7 = 3$

(h) Solution to $2x = 3$

(i) Solution to $x^2 - 2 = 0$

(j) Solution to $x^2 + 2 = 0$

Problem 2. Find the decimal expansion of the fraction $\frac{7}{11}$. Justify your answer (that is, show work).

Problem 3. Write $12.3\overline{45}$ as a fraction.

Problem 4. Solve the following equations.

(a) $x + 8 = 13$

(b) $7x + 2 = 51$

(c) $3x + 2 = 10x - 1$

(d) $x^2 + 3 = 10$

(e) $x^2 + 10 = 3$