The “systems” of equations that will be considering on this handout are essentially the same systems on the first handout. Tonight’s homework is to express these equations in matrix form.

1. Write the following equations in matrix form. Note this is a warm-up exercise.

(a) \(3x = 2\)
(b) \(2x = 3\)
(c) \(2x = 8\)
(d) \(5x = 35\)

2. Write the following equations in matrix form. Solve the system.

(a) \(3x + 4y = 24\)
(b) \(2x - 5y = 30\)
(c) \(x + y = 1\)
(d) \(5x - 4y = 20\)

3. Write the system of equations in matrix form. Solve the system.

(a) \[\begin{align*}
3x + 4y &= 24 \\
y &= 0
\end{align*}\]
(b) \[\begin{align*}
2x - 5y &= 30 \\
y &= 0
\end{align*}\]
(c) \[\begin{align*}
x + y &= 1 \\
y &= 0
\end{align*}\]
(d) \[\begin{align*}
5x - 4y &= 20 \\
y &= 0
\end{align*}\]
4. Write the systems of equations in matrix form. Solve the systems.

(a) \[3x + 4y + 8z = 24\]
(b) \[2x - 5y - 6z = 30\]
(c) \[x + y + z = 1\]
(d) \[5x + 4y - 2z = 20\]
(e) \[3x + 4y + 8z = 24\]
(f) \[2x - 5y - 6z = 30\]
(g) \[x + y + z = 1\]
(h) \[5x + 4y - 2z = 20\]
(i) \[3x + 4y + 8z = 24\]
(j) \[2x - 5y - 6z = 30\]
\[y = 0\]
\[z = 0\]

(k) \[x + y + z = 1\]
\[y = 0\]
\[z = 0\]

(l) \[5x + 4y - 2z = 20\]
\[y = 0\]
\[z = 0\]

(m) \[3x + 4y + 8z = 24\]
\[x = 0\]
\[y = 0\]

(n) \[2x - 5y - 6z = 30\]
\[x = 0\]
\[y = 0\]

(o) \[x + y + z = 1\]
\[x = 0\]
\[y = 0\]

(p) \[5x + 4y - 2z = 20\]
\[x = 0\]
\[y = 0\]

(q) \[3x + 4y + 8z = 24\]
\[x = 0\]
\[y = 0\]

(r) \[2x - 5y - 6z = 30\]
\[x = 0\]
\[z = 0\]

(s) \[x + y + z = 1\]
\[x = 0\]
\[z = 0\]
5x + 4y - 2z = 20
x = 0
z = 0

5. Write the equation

\[ a_1x_1 + a_2x_2 + \cdots + a_nx_n = b \]

in matrix form. Determine the point of intersection of this \((n - 1)\)-dimensional hypersolid with each of the coordinate axes. Express the associated problems each as a system equations.