Answer Key · Lesson 2.4: Systems of Three Equations in Three Variables

School Launch · Algebra II · Unit 2 · Worksheet A · for the parent

Key

1. $(-3, 5, 5)$

Solve the system: $x + z = 2$; $x + 3z = 12$; $-3x - 2y + 2z = 9$.

2. $(5, 5, -4)$

Solve the system: $-4x + 2z = -28$; $-x + 4y - 4z = 31$; $2y - 4z = 26$.

3. $(1, 3, -4)$

Solve the system: $-3x + 4z = -19$; $x - 3y + z = -12$; $-x + 3z = -13$.

4. $(1, -4, -1)$

1. Eliminate z: $(-2)\cdot$eq2 $-(3)\cdot$eq1: $-11x + 5y + 31 = 0$
2. $(-2)\cdot$eq3 $-(-2)\cdot$eq1: $4x - 2y - 12 = 0$
3. Solve the 2×2: $x = 1$, $y = -4$; back-substitute: $z = -1$

Solve the system: $x + y - 2z = -1$; $4x - 4y + 3z = 17$; $-x + 2y - 2z = -7$.

5. $(3, 2, 2)$

1. Eliminate z: $(4)\cdot$eq2 $-(-2)\cdot$eq1: $2x - 4y + 2 = 0$
2. $(4)\cdot$eq3 $-(-1)\cdot$eq1: $15x - 8y - 29 = 0$
3. Solve the 2×2: $x = 3$, $y = 2$; back-substitute: $z = 2$

Solve the system: $-x - 4y + 4z = -3$; $x + y - 2z = 1$; $4x - y - z = 8$.

6. $(-3, 1, -3)$

1. Eliminate z: $(1)\cdot$eq2 $-(2)\cdot$eq1: $3x + 9y = 0$
2. $(1)\cdot$eq3 $-(-4)\cdot$eq1: $-8x - 15y - 9 = 0$
3. Solve the 2×2: $x = -3$, $y = 1$; back-substitute: $z = -3$

Solve the system: $-x - 4y + z = -4$; $x + y + 2z = -8$; $-4x + y - 4z = 25$.

7. $(4, -2, 3)$

1. Eliminate z: $(4)\cdot$eq2 $-(-2)\cdot$eq1: $-12x + 18y + 84 = 0$
2. $(4)\cdot$eq3 $-(2)\cdot$eq1: $-12x + 10y + 68 = 0$
3. Solve the 2×2: $x = 4$, $y = -2$; back-substitute: $z = 3$

Solve the system: $2x + 3y + 4z = 14$; $-4x + 3y - 2z = -28$; $-2x + 4y + 2z = -10$.

8. $(-1, -1, -5)$

1. Eliminate z: $(-4)\cdot$eq2 $-(1)\cdot$eq1: $-2x - 5y - 7 = 0$
2. $(-4)\cdot$eq3 $-(-3)\cdot$eq1: $6x - 5y + 1 = 0$
3. Solve the 2×2: $x = -1$, $y = -1$; back-substitute: $z = -5$

Solve the system: $-2x - 3y - 4z = 25$; $x + 2y + z = -8$; $-3x - y - 3z = 19$.

9. $(4, -5, -3)$

1. Eliminate z: $(-3)\cdot$eq2 $-(1)\cdot$eq1: $x - 2y - 14 = 0$
2. $(-3)\cdot$eq3 $-(-3)\cdot$eq1: $-15x + 6y + 90$
3. Solve the 2×2: $x = 4$, $y = -5$; back-substitute: $z = -3$

Solve the system: $-4x - y - 3z = -2$; $x + y + z = -4$; $x - 3y - 3z = 28$.

10. $(-5, -3, 4)$

1. Eliminate z: $(-1)\cdot$eq2 $-(-2)\cdot$eq1: $-3x - 5y - 30$
2. $(-1)\cdot$eq3 $-(-1)\cdot$eq1: $-2x - y - 13 = 0$
3. Solve the 2×2: $x = -5$, $y = -3$; back-substitute: $z = 4$

Solve the system: $-3x - 4y - z = 23$; $-3x - 3y - 2z = 16$; $-x - 3y - z = 10$.