Systems of Equations Three Variables

Solve each system by elimination.

1) $-x - 5y - 5z = 2$
 $4x - 5y + 4z = 19$
 $x + 5y - z = -20$

2) $-4x - 5y - z = 18$
 $-2x - 5y - 2z = 12$
 $-2x + 5y + 2z = 4$

3) $-x - 5y + z = 17$
 $-5x - 5y + 5z = 5$
 $2x + 5y - 3z = -10$

4) $4x + 4y + z = 24$
 $2x - 4y + z = 0$
 $5x - 4y - 5z = 12$

5) $4r - 4s + 4t = -4$
 $4r + s - 2t = 5$
 $-3r - 3s - 4t = -16$

6) $x - 6y + 4z = -12$
 $x + y - 4z = 12$
 $2x + 2y + 5z = -15$

7) $x - y - 2z = -6$
 $3x + 2y = -25$
 $-4x + y - z = 12$

8) $5a + 5b + 5c = -20$
 $4a + 3b + 3c = -6$
 $-4a + 3b + 3c = 9$

9) $-6r + 5s + 2t = -11$
 $-2r + s + 4t = -9$
 $4r - 5s + 5t = -4$

10) $-6x - 2y + 2z = -8$
 $3x - 2y - 4z = 8$
 $6x - 2y - 6z = -18$

11) $5x - 4y + 2z = 21$
 $-x - 5y + 6z = -24$
 $-x - 4y + 5z = -21$

12) $6r - s + 3t = -9$
 $5r + 5s - 5t = 20$
 $3r - s + 4t = -5$

13) $-3a - b - 3c = -8$
 $-5a + 3b + 6c = -4$
 $-6a - 4b + c = -20$

14) $-5x + 3y + 6z = 4$
 $-3x + y + 5z = -5$
 $-4x + 2y + z = 13$

15) $3a - 3b + 4c = -23$
 $a + 2b - 3c = 25$
 $4a - b + c = 25$

16) $-6x - 2y - z = -17$
 $5x + y - 6z = 19$
 $-4x - 6y - 6z = -20$

Answers

1) $-x - 5y - 5z = 2$
   $4x - 5y + 4z = 19$
   $x + 5y - z = -20$

   $(-2, -3, 3)$

2) $-4x - 5y - z = 18$
   $-2x - 5y - 2z = 12$
   $-2x + 5y + 2z = 4$

   $(-4, 0, -2)$

3) $-x - 5y + z = 17$
   $-5x - 5y + 5z = 5$
   $2x + 5y - 3z = -10$

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

4) $4x + 4y + z = 24$
   $2x - 4y + z = 0$
   $5x - 4y - 5z = 12$

   $(4, 2, 0)$

5) $4r - 4s + 4t = -4$
   $4r + s - 2t = 5$
   $-3r - 3s - 4t = -16$

   $(1, 3, 1)$

6) $x - 6y + 4z = -12$
   $x + y - 4z = 12$
   $2x + 2y + 5z = -15$

   $(0, 0, -3)$

7) $x - y - 2z = -6$
   $3x + 2y = -25$
   $-4x + y - z = 12$

   $(-5, -5, 3)$

8) $5a + 5b + 5c = -20$
   $4a + 3b + 3c = -6$
   $-4a + 3b + 3c = 9$

   No unique solution

9) $-6r + 5s + 2t = -11$
   $-2r + s + 4t = -9$
   $4r - 5s + 5t = -4$

   $(4, 3, -1)$

10) $-6x - 2y + 2z = -8$
    $3x - 2y - 4z = 8$
    $6x - 2y - 6z = -18$

    No unique solution

11) $5x - 4y + 2z = 21$
    $-x - 5y + 6z = -24$
    $-x - 4y + 5z = -21$

    $(5, -1, -4)$

12) $6r - s + 3t = -9$
    $5r + 5s - 5t = 20$
    $3r - s + 4t = -5$

    $(-1, 6, 1)$

13) $-3a - b - 3c = -8$
    $-5a + 3b + 6c = -4$
    $-6a - 4b + c = -20$

$(2, 2, 0)$

14) $-5x + 3y + 6z = 4$
    $-3x + y + 5z = -5$
    $-4x + 2y + z = 13$

$(-2, 4, -3)$

15) $3a - 3b + 4c = -23$
    $a + 2b - 3c = 25$
    $4a - b + c = 25$

No unique solution

16) $-6x - 2y - z = -17$
    $5x + y - 6z = 19$
    $-4x - 6y - 6z = -20$

$(2, 3, -1)$