Solving Systems of Three Equations w/ Substitution   Date_____ Period____

Solve each system by substitution.

1) $-x - y - 3z = -9$
   $z = -3x - 1$
   $x = 5y - z + 23$

2) $x = -4z - 19$
   $y = 5x + z - 4$
   $-5y - z = 25$

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

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

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

6) $x = 3y - 3z + 8$
   $z = 4x + 5y - 14$
   $3y + 2z = 14$

7) $-5x - 3y + z = -4$
   $-2x - 2y + 2z = 4$
   $z = x + 5$

8) $-4x + 2z = 14$
   $y = x + z + 12$
   $-2x - 4z = 22$

9) $3x - 3y = -6$
   $z = -3x - 3y + 9$
   $-4x + 5y + z = 8$

10) $x = -5y + 4z + 1$
    $x - 2y + 3z = 1$
    $2x + 3y - z = 2$

11) $a - 2b + c = -6$
    $a + 5c = -12$
    $-a + 6b + 4c = 3$

12) $-2x + 3y + 5z = -21$
    $-4z = 20$
    $6x - 3y = 0$

13) $2x - 4z = 20$
    $-3x + y - 4z = 20$
    $-4x + 2y + 3z = -15$

14) $x + 3y = -17$
    $3x = -6$
    $4x - 3y + 6z = 25$

15) $5r + 4s - 6t = -24$
    $-2s + 2t = 0$
    $s - t = 2$

16) $-5r + 5s + 3t = -23$
    $-5r + 3s - 3t = -11$
    $-6r + 6t = -12$

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Solve each system by substitution.

1) $-x - y - 3z = -9$
$z = -3x - 1$
$x = 5y - z + 23$

$(-2, -4, 5)$

2) $x = -4z - 19$
$y = 5x + z - 4$
$-5y - z = 25$

$(1, -4, -5)$

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

$(-2, 0, -3)$

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

$(0, -1, -1)$

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

$(0, 3, 2)$

6) $x = 3y - 3z + 8$
$z = 4x + 5y - 14$
$3y + 2z = 14$

$(2, 2, 4)$

7) $-5x - 3y + z = -4$
$-2x - 2y + 2z = 4$
$z = x + 5$

$(0, 3, 5)$

8) $-4x + 2z = 14$
$y = x + z + 12$
$-2x - 4z = 22$

$(-5, 4, -3)$

9) $3x - 3y = -6$
   $z = -3x - 3y + 9$
   $-4x + 5y + z = 8$

   $(1, 3, -3)$

10) $x = -5y + 4z + 1$
    $x - 2y + 3z = 1$
    $2x + 3y - z = 2$

    No unique solution

11) $a - 2b + c = -6$
    $a + 5c = -12$
    $-a + 6b + 4c = 3$

    $(3, 3, -3)$

12) $-2x + 3y + 5z = -21$
    $-4z = 20$
    $6x - 3y = 0$

    $(1, 2, -5)$

13) $2x - 4z = 20$
    $-3x + y - 4z = 20$
    $-4x + 2y + 3z = -15$

    $(0, 0, -5)$

14) $x + 3y = -17$
    $3x = -6$
    $4x - 3y + 6z = 25$

    $(-2, -5, 3)$

15) $5r + 4s - 6t = -24$
    $-2s + 2t = 0$
    $s - t = 2$

    No unique solution

16) $-5r + 5s + 3t = -23$
    $-5r + 3s - 3t = -11$
    $-6r + 6t = -12$

    $(1, -3, -1)$