

873 p527 #19, 5, 13, 15, 43

(19) $3x - y + z = 1$ $(2, 0, -3)$
 $2x - 3z = -14$
 $5y + 2z = 8$
 $3(2) - 0 + -3 = 3 \neq 1$ NO!

(5) $2x - y + 5z = 24$
 $y + 2z = 6 \rightarrow y + 2(4) = 6$
 $z = 4 \quad y = -2$

$2x - (-2) + 5(4) = 24$
 $2x = 2$
 $x = 1$

$(1, -2, 4)$

(13) $x + y + z = 6$
 $2x - y + z = 3$
 $3x - z = 0 \rightarrow z = 3x$

$x + y + 3x = 6$
 $2x - y + 3x = 3$

$4x + y = 6$
 $5x - y = 3$

$9x = 9$
 $x = 1$
 $z = 3$
 $y = 2$

$(1, 2, 3)$

$$\begin{aligned} 15) \quad 2x + 2z &= 2 \\ 5x + 3y &= 4 \\ 3y - 4z &= 4 \end{aligned}$$

$$\boxed{(-4, 8, 5)}$$

$$\begin{aligned} 5x + 3y &= 4 \\ -3y + 4z &= -4 \\ \hline 5x + 4z &= 0 \\ -4x + 4z &= 4 \end{aligned}$$

$$\begin{aligned} x &= -4 \\ 3y &= 2y \\ y &= 8 \\ 4z &= 20 \\ z &= 5 \end{aligned}$$

43) find the equation for parabola.

$$y = ax^2 + bx + c$$

passing through $(0, 0)$, $(2, -2)$, $(4, 0)$

$$a(0)^2 + b(0) + c = 0$$

$$a(2)^2 + b(2) + c = -2$$

$$a(4)^2 + b(4) + c = 0$$

$$c = 0$$

$$4a + 2b + c = -2$$

$$16a + 4b + c = 0$$

$$\begin{aligned} 4a + 2b &= -2 \\ 16a + 4b &= 0 \end{aligned}$$

$$-16a - 8b = 8$$

$$16a + 4b = 0$$

$$\hline -4b = 8$$

$$b = -2$$

$$a = \frac{1}{2}$$

$$\boxed{y = \frac{1}{2}x^2 - 2x}$$