

①

	P	r	t	I
acc 1	x	0.09	1	0.09x
acc 2	6000-x	0.06	1	0.06(6000-x)

$$0.09x = 0.06(6000-x)$$

$$0.09x = 360 - 0.06x$$

$$0.15x = 360$$

$$x = \frac{360}{0.15}$$

$$x = 2400$$

\$2400 in 9% and \$3600 in 6%

② a) $(-\infty, \infty)$

b) denominator $\neq 0$

$$(2x-1)(x+3) \neq 0$$

$$2x-1 \neq 0 \quad x+3 \neq 0$$

$$x \neq \frac{1}{2} \quad x \neq -3$$

$$(-\infty, -3) \cup (-3, \frac{1}{2}) \cup (\frac{1}{2}, \infty)$$

c) radicand ≥ 0

$$\frac{2}{3}x - \frac{4}{5} \geq 0$$

$$10x - 8 \geq 0$$

$$10x \geq 8$$

$$x \geq \frac{4}{5}$$

$$[\frac{4}{5}, \infty)$$

③ a) $g(-3) = 3$

b) $[-5, 7]$

c) $[-7, 5]$

d) $x = 0, x \approx 5.8$

e) $x = -2, x = 1, x \approx 5.3$

④

popcorn	caramel	mix
$\underbrace{\$0.80}_5$	$\underbrace{\$2.40}_x$	$\underbrace{\$1.40}_{5+x}$

$$0.80(5) + 2.40(x) = 1.40(5+x)$$

$$4 + 2.40x = 7 + 1.40x$$

$$1x = 3$$

need 3 lb of caramel

⑤ a) $f(-3) = (-3)^2 - 2(-3)$
 $= 9 + 6$
 $= 15$

b) $f(x+h) = (x+h)^2 - 2(x+h)$
 $= x^2 + 2xh + h^2 - 2x - 2h$

⑥ a) $B(m) = 5.95 + 0.05m$

b) Independent variable: m (minutes used)Dependent variable: B (monthly bill)

c) $[0, \infty)$

d) $\langle B(300) = ? \rangle$

$$B(300) = 5.95 + 0.05(300)$$

$$= 5.95 + 15$$

$$= 20.95$$

e) $\langle B(m) = 17.95, m = ? \rangle$

$$17.95 = 5.95 + 0.05m$$

$$12 = 0.05m$$

$$240 = m$$

f) $\langle B(m) \leq 18.45, m \equiv ? \rangle$

$$5.95 + 0.05m \leq 18.45$$

$$0.05m \leq 12.50$$

$$m \leq 250$$

$$[0, 250] \text{ minutes.}$$

$$\textcircled{7} \begin{cases} 3x + 2y = 0 & \text{--- (1)} \\ 6x + 2y = 5 & \text{--- (2)} \end{cases}$$

$$\begin{aligned} 3x + 2y &= 0 \\ 2y &= -3x \\ y &= -\frac{3}{2}x \end{aligned}$$

$$\begin{aligned} 6x + 2y &= 5 \\ 6x + 2\left(-\frac{3}{2}x\right) &= 5 \end{aligned}$$

$$\begin{aligned} 6x - 3x &= 5 \\ 3x &= 5 \\ x &= \frac{5}{3} \end{aligned}$$

$$\begin{aligned} y &= -\frac{3}{2}x \\ &= -\frac{3}{2}\left(\frac{5}{3}\right) \\ &= -\frac{5}{2} \end{aligned}$$

$$\left(\frac{5}{3}, -\frac{5}{2}\right)$$

$$\textcircled{8} \begin{aligned} m \angle 1 &= x \\ m \angle 2 &= x \\ m \angle 3 &= 3x - 10 \end{aligned}$$

$$x + x + (3x - 10) = 180$$

$$5x - 10 = 180$$

$$5x = 190$$

$$x = 38$$

$$m \angle 1 = 38^\circ, m \angle 2 = 38^\circ, m \angle 3 = 104^\circ$$

$$\textcircled{9} \begin{cases} \frac{1}{3}x - \frac{1}{2}y = -5 & | \times 6 \\ -\frac{4}{5}x + \frac{6}{5}y = 1 & | \times 5 \end{cases}$$

$$\begin{cases} 2x - 3y = -30 & | \times 2 \\ -4x + 6y = 5 & \end{cases}$$

$$+ \begin{cases} 4x - 6y = -60 \\ -4x + 6y = 5 \end{cases}$$

$$0 = -55 \leftarrow \text{false.}$$

ϕ

$$\textcircled{10} \begin{array}{ccc} \text{Type 1} & \text{pure shampoo} & \text{mix} \\ \left(\frac{20\%}{12}\right) & \left(\frac{0\%}{8}\right) & = \left(\frac{x\%}{20}\right) \end{array}$$

$$0.2(12) + 0(8) = x(20)$$

$$2.4 = 20x$$

$$0.12 = x$$

12% concentration of conditioner in the 20-oz mixture.

$$\textcircled{11} \begin{cases} x + y + z = -3 & \textcircled{1} \\ 2x - 2y - z = -7 & \textcircled{2} \\ -3x + y + 5z = 5 & \textcircled{3} \end{cases}$$

$$+ \begin{cases} x + y + z = -3 & \textcircled{1} \\ 2x - 2y - z = -7 & \textcircled{2} \end{cases}$$

$$3x - y = -10 \quad \textcircled{4}$$

$$5 \times \begin{cases} 2x - 2y - z = -7 & \textcircled{2} \\ -3x + y + 5z = 5 & \textcircled{3} \end{cases}$$

$$+ \begin{cases} 10x - 10y - 5z = -35 \\ -3x + y + 5z = 5 \end{cases}$$

$$7x - 9y = -30 \quad \textcircled{5}$$

$$-9 \times \begin{cases} 3x - y = -10 & \textcircled{4} \\ 7x - 9y = -30 & \textcircled{5} \end{cases}$$

$$+ \begin{cases} -27x + 9y = 90 \\ 7x - 9y = -30 \end{cases}$$

$$-20x = 60$$

$$x = \underline{-3}$$

$$3x - y = -10$$

$$3(-3) - y = -10$$

$$-9 - y = -10$$

$$-9 + 10 = y$$

$$1 = \underline{y}$$

$$x + y + z = -3$$

$$-3 + 1 + z = -3$$

$$-2 + z = -3$$

$$z = \underline{-1}$$

$$(-3, 1, -1)$$