Homework 10 Hints

Section 12.6

→ Make note of ① which variables are squared
② If they are positive or negative
③ If the coefficients are equal

Is only one variable squared?

YES → parabola

NO → Is one of the squared variables negative?

YES → hyperbola

NO → Are the coefficients of the squared variables the same

YES → Circle

NO → Ellipse

Section 13.1

#11 Can use either equation for the substitution

$x+y=1$ ---------- ↓

$x-y=3 \rightarrow x=y+3 \rightarrow x+y=1$

$(y+3)+y=1$

#13 Best to use second equation for substitution; solve for y

#15 ~~Best~~ Best to use ~~second~~ first equation; solve for x

Then use techniques for solving quadratic equations

Homework 10 Hints

Section 13.2

#5 Multiply first equation by -2

$$\begin{cases} -2(x + 2y = 6) & \text{eqn 1} \\ 2x + 4y = 12 & \text{eqn 2} \end{cases}$$

$$\downarrow$$

$$\begin{aligned} -2x - 4y &= -12 \\ 2x + 4y &= 12 \end{aligned}$$

#9 Multiply eqn 1 by 3
Multiply eqn 2 by -2 $\left(\text{or } \begin{matrix} -3 \\ 2 \end{matrix}\right)$

#19 If you eliminate x: multiply ~~B~~ eqn 1 by
eqn 2 by

If you eliminate y: multiply eqn 1 by 4
eqn 2 by 3

Section 13.3

#21 c) Plug the x from part b into the ~~cost~~ revenue equation

#23 Cost Eqn : $C = 400 + 0.15x$
Revenue Eqn $R = 0.25x$

#25 b) ~~Plug x (or p in this problem)~~ The y coordinate of part a is the number sold at equilibriu

#27 b) The y coordinate of part a answer is # sold at equilibrium

Homework 10 Hints

Section 13.4

#1 Best to eliminate x

$$\begin{cases} x + 2y + 3z = -6 & (1) \\ 2x - 3y - 4z = 15 & (2) \\ 3x + 4y + 5z = -8 & (3) \end{cases}$$

(1) & (2)

$$\begin{cases} (-2)(x + 2y + 3z = -6) \\ 2x - 3y - 4z = 15 \end{cases}$$

$$\downarrow$$

$$\begin{array}{r} -2x - 4y - 6z = 12 \\ +\ 2x - 3y - 4z = 15 \\ \hline -7y - 10z = 27 \end{array} \quad (a)$$

(1) & (3)

$$\begin{cases} (-3)(x + 2y + 3z = -6) \\ 3x + 4y + 5z = -8 \end{cases}$$

$$\downarrow$$

$$\begin{array}{r} -3x - 6y - 9z = 18 \\ +\ 3x + 4y + 5z = -8 \\ \hline -2y - 4z = 10 \end{array}$$

divide by -2

$$y + 2z = -5 \quad (b)$$

Now Solve System of eqns (a) and (b)

$$\begin{cases} -7y - 10z = 27 \\ y + 2z = -5 \end{cases}$$

Homework 10 Hints

Section 13.4

#5 Can eliminate any variable → Easiest is z

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

(1) & (2)

$$\begin{cases} -2(x+y+z=2) \\ x-y+2z=3 \end{cases}$$

$$\downarrow$$

$$\begin{array}{r} -2x-2y-2z=-4 \\ +\quad x-y+2z=3 \\ \hline -x-3y=-1 \end{array}$$

multiply

$$x+3y=1 \quad (a)$$

(1) & (3)

$$\begin{cases} -2(x+y+z=2) \\ 3x+5y+2z=6 \end{cases}$$

$$\downarrow$$

$$\begin{array}{r} -2x-2y-2z=-4 \\ +\quad 3x+5y+2z=6 \\ \hline x+3y=2 \end{array} \quad (b)$$

Now solve system of eqns (a) and (b)

$$\begin{cases} x+3y=1 \\ x+3y=2 \end{cases}$$