Who Killed Mr. V?

ANSWER KEY

$\begin{cases} 2x + y - z = -4 \\ 3y + 4z = 32 \\ x - 2y + 3z = -15 \end{cases}$	1. $x = -5$ Library
	2. $y = 8$ Mr. Green
	3. $z = 2$ Mrs. Brown
$\begin{cases} x - y + z = 13 \\ 2x + 3y - z = -26 \\ 3x - 2y + 2z = 27 \end{cases}$	4. $x = 1$ Wrench
	5. $y = -8$ Media Room
	6. $z = 4$ Living Room
$\begin{cases} x + y + z = 1 \\ 3x - 2y + z = 24 \\ -2x - 3y - 2z = 7 \end{cases}$	7. $x = -2$ Game Room
	8. $y = -9$ Poison
	9. $z = 12$ Ms. Scarlett
$\begin{cases} 3x - 2y + z = 36 \\ -4x - 3y - 2z = 15 \\ x + y + x = -7 \end{cases}$	10. $x = 5$ Rope
	11. $y = -1$ Bedroom
	12. $z = -1$ Kitchen
$\begin{cases} 2x - y + 3z = -1 \\ x + 2y + z = 24 \\ 3x - 2y + 4z = -10 \end{cases}$	13. $x = -4$ Mrs. White
	14. $y = 11$ Leadpipe
	15. $z = 6$ Study

IT WAS (WHO)	WITH A (WHAT)	IN THE (WHERE)
Dr. Black	Candlestick	Dining Room

Phrase: Failure is not an option

1. Find the required information and graph the conic section:

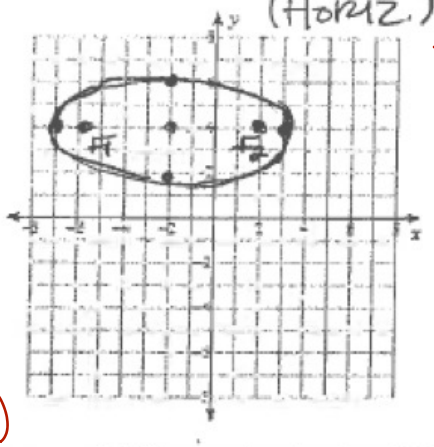
$\frac{(x+2)^2}{25} + \frac{(y-4)^2}{4} = 1$ (h=-2, k=4)

$c^2 = a^2 - b^2$

$c = 25 - 4 = \sqrt{21}$

a=5 MAJOR b=2 MINOR

(Horiz) x is major



(h, k)

Classify the conic section: ELLIPSE Center: (-2, 4)

Vertices: (-7, 4) (3, 4) Foci: (-2+√21, 4) (-2-√21, 4)

(h±a, k) (h±c, k)

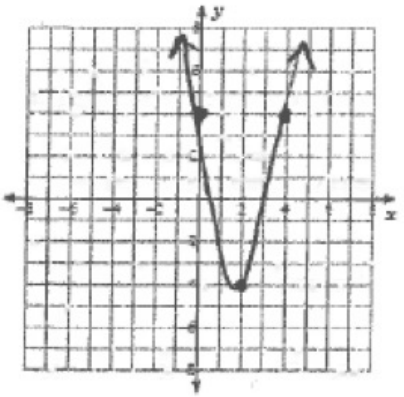
2. Find the required information and graph the conic section: $y = 2x^2 - 8x + 4$

VERTICAL

$y = 2(x^2 - 4x + 2)$ $y + 4 = 2(x^2 - 4x + 4)$

$y = 2(x-2)^2 - 4$ $\frac{1}{4p} = 2$ $p = \frac{1}{8}$

h=2 k=-4=$\frac{-32}{8}$



(h, k)

Classify the conic section: PARABOLA Vertex: (2, -4)

Focus: (2, $-\frac{31}{8}$) Directrix: $y = -4\frac{1}{8}$ ($-\frac{33}{8}$)

(h, k+p) y = k - p

7. Find the required information and graph: $7x^2 + 3y^2 - 42x + 6y - 39 = 0$

(Vertical) y is major

$(7x^2 - 42x + \_\_) + (3y^2 + 6y + \_\_) = 39$

$7(x^2 - 6x + 9) + 3(y^2 + 2y + 1) = 39 + 63 + 3$

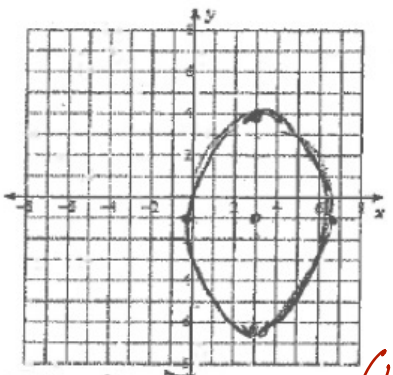
$7(x-3)^2 + 3(y+1)^2 = 105$

h=3 k=-1

$\frac{(x-3)^2}{15} + \frac{(y+1)^2}{35} = 1$

$c^2 = 35 - 15 = \sqrt{20}$

b=√15 a=√35



a=√15 (3.9) b=√35 (5.8)

(h, k)

Classify the conic section: ELLIPSE Center: (3, 1)

Vertices: (3, -1+√35) (3, -1-√35) Foci: (-3, -1+√20) (-3, -1-√20)

(h, k±a) (h, k±c)

8. Find the required information and graph the conic section:

$4y^2 + x - 32y + 68 = 0$

HORIZONTAL

$-x = 4y^2 - 32y + 68$

$-x = 4(y^2 - 8y + 16) + 68 - 64$

$-x = 4(y-4)^2 + 4$

$x = -4(y-4)^2 - 4$

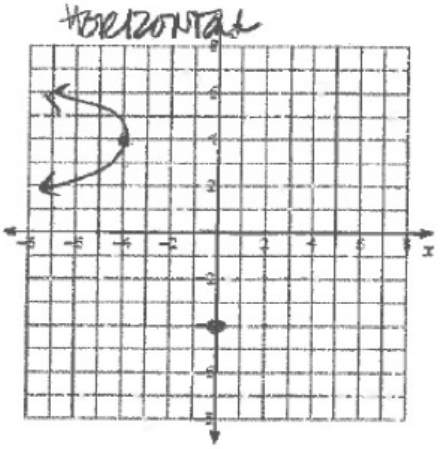
4=k -4=h

$\frac{1}{4p} = -4$ $p = \frac{-1}{16}$

$x = h - \frac{1}{4a}$

$x = -4 + \frac{1}{16}$

$x = -\frac{64}{16} + \frac{1}{16} = -\frac{63}{16}$



Classify the conic section: PARABOLA Vertex: (-4, 4)

(h, k)

Focus: ($-\frac{65}{16}$, 4) Directrix: $x = -63/16$

(h+p, k) x = h - p