

| | | |
|---|---|---|
| $x^2 + 0x + 1$ $\frac{-B}{2A} = \frac{-0}{2(1)} = 0$ $0^2 + 0(0) + 1 = 1$ <p>(0, 1)</p> <p>SP</p> $(1)^2 + 1 = 2$ <p>(1, 2)</p> $(2)^2 + 1 = 5$ <p>(2, 5)</p> | <p>1. $y = x^2 + 1$ $y = x + 1$</p> <p>2. $y = x^2 + 4$ $y = 4x + 0$</p> <p>3. $y = x^2 - 5x - 4$ $y = -2x$</p> <p>4. $y = x^2 + 2x + 4$ $y = x + 1$</p> <p>5. $y = x^2 + 2x + 5$ $y = -2x + 1$</p> <p>6. $y = 3x + 4$ $y = -x^2$</p> | $AX^2 + BX + C$ $1x^2 + 0x + 4$ $\frac{-B}{2A} = \frac{-0}{2(1)} = \frac{0}{2} = 0$ <p>(0, 4)</p> $(0)^2 + 4 = 4$ <p>SP</p> $(1)^2 + 4 = 5$ <p>(1, 5)</p> $(2)^2 + 4 = 8$ <p>(2, 8)</p> |
| | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: 45%;"> <p>1.</p> </div> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; width: 45%;"> <p>2.</p> </div> </div> | |
| | <p>Algebraically</p> $\begin{array}{r} x+1 \\ -x-1 \\ \hline 0 = x^2 - x + 0 \\ (x-1)(x+0) \\ x-1=0 \quad x=0 \\ \boxed{x=1} \quad \boxed{x=0} \end{array}$ | |
| | $\begin{array}{r} 4x = x^2 + 4 \\ -4x \quad -4x \\ \hline 0 = x^2 - 4x + 4 \\ (x-2)(x-2) \\ x=2 \\ 4(2) = 8 \\ \boxed{(2, 8)} \end{array}$ | |

$y = x^2 - 5x - 4$
 $y = -2x$

$(-1)^2 - 5(-1) - 4 = 2$
 $(-1, 2)$

$\frac{-(-5)}{2} = 2.5$
 $(2.5)^2 - 5(2.5) - 4$
 $(2.5, -10.25)$

SP
 $4^2 - 5(4) - 4 =$
 $16 - 20 - 4$
 -8
 $3^2 - 5(3) - 4$
 $9 - 15 - 4$

$-2x = x^2 - 5x - 4$
 $+2x \quad +2x$

 $0 = x^2 - 3x - 4$

$x = 4 \quad x = -1$

$(4, -8)$ $(-1, 2)$

$y = x^2 + 2x + 4$
 $y = x + 1$

$\frac{-2}{2} = -1$
 $(-1)^2 + 2(-1) + 4$
 $1 - 2 + 4$
 3
 $(-1, 3)$

SP
 $1^2 + 2(1) + 4$
 $(1, 7)$

$x + 1 = x^2 + 2x + 4$
 $-x - 1 \quad -x - 1$

 $0 = x^2 + x + 3$

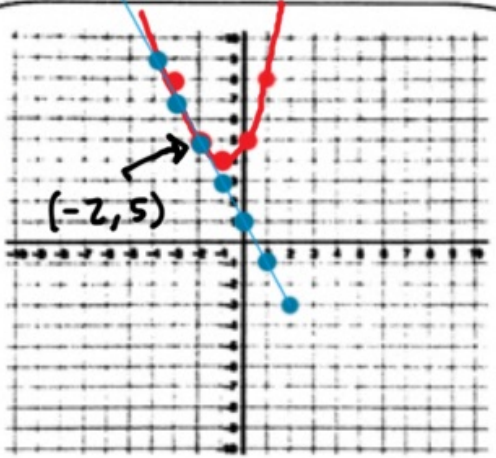
$\frac{3}{1}$

No Solutions

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$y = x^2 + 2x + 5$
 $y = -2x + 1$

$\frac{-2}{2} = -1$
 $(-1)^2 + 2(-1) + 5 = 4$
 $(-1, 4)$
SP
 $1^2 + 2(1) + 5 = 8$
 $(1, 8)$

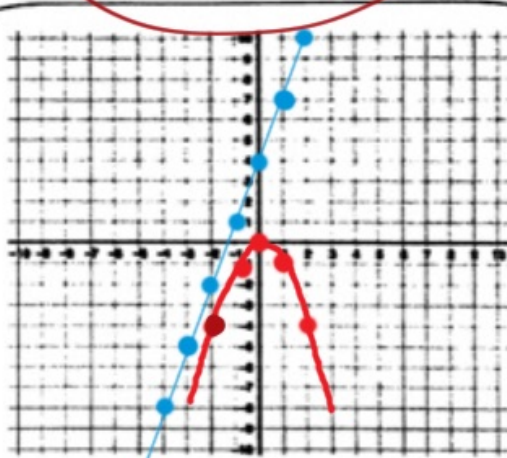


$-2x + 1 = x^2 + 2x + 5$
 $+2x - 1 \quad +2x - 1$

$0 = x^2 + 4x + 4$
 $(x + 2)(x + 2)$
 $x = -2 \quad x = -2$

$-2(-2) + 1 = 5$
 $4 + 1 = 5$ $(-2, 5)$

$y = 3x + 4$
 $y = -x^2$ $-(-2)^2 = -4$




$-x^2 = 3x + 4$
 $+x^2 \quad +x^2$

$0 = x^2 + 3x + 4$

No Solution

~~4
3~~

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Solve each of the following GRAPHICALLY AND ALGEBRAICALLY. Show all your work for full credit. Check all solutions on DESMOS.

$$(0-1)^2 + 3$$

$$1 + 3 = 4$$

$$(0, 4)$$

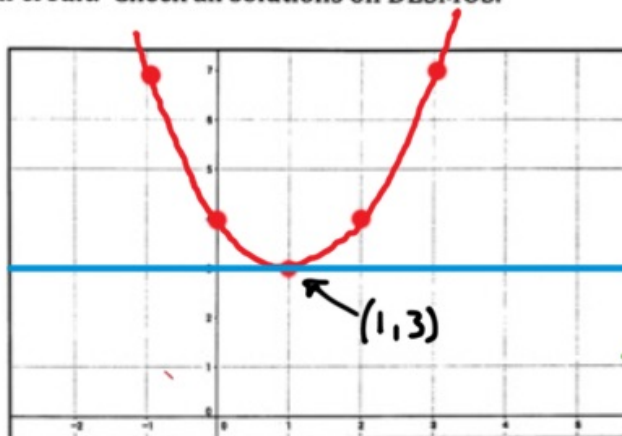
SP

$$(3-1)^2 + 3$$

$$4 + 3 = 7$$

$$(3, 7)$$

$$\begin{cases} y = (x-1)^2 + 3 \\ y = 3 \end{cases}$$



$$3 = (x-1)^2 + 3$$

$$\frac{-3}{-3}$$

$$\sqrt{0} = \sqrt{(x-1)^2}$$

$$0 = x-1$$

$$\frac{+1}{+1}$$

$$1 = x$$

$$(0+4)^2 - 4$$

$$16 - 4 = 12$$

$$(0, 12)$$

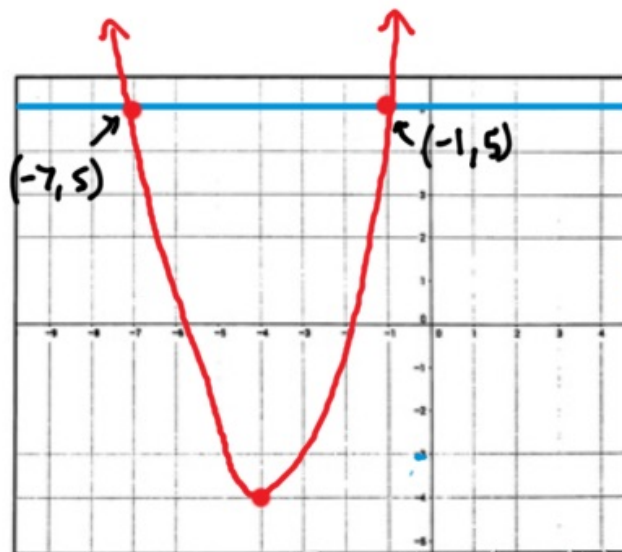
SP

$$(-1+4)^2 - 4$$

$$9 - 4 = 5$$

$$(-1, 5)$$

$$\begin{cases} y = (x+4)^2 - 4 \\ y = 5 \end{cases}$$



$$5 = (x+4)^2 - 4$$

$$\frac{+4}{+4}$$

$$\sqrt{9} = \sqrt{(x+4)^2}$$

$$\pm 3 = x+4$$

$$\frac{-4}{-4}$$

$$-3 + 4 = x$$

$$-7 = x$$

$$-3 + 4 = x$$

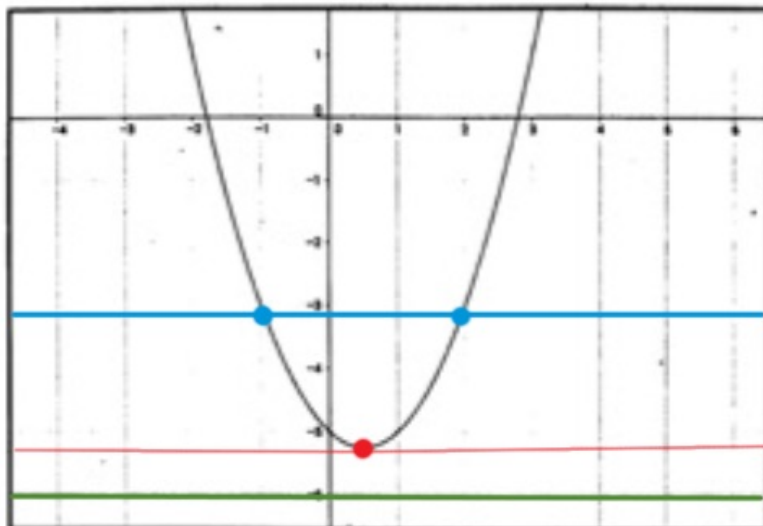
$$-7 = x$$

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Math II

Systems of Equations

In the space below, write a linear equation that give ONE solution, TWO solutions and NO solution.



ONE SOLUTION

$$\begin{cases} y = x^2 - x - 5 \\ y = \underline{-5} \end{cases}$$

TWO SOLUTIONS

$$\begin{cases} y = x^2 - x - 5 \\ y = \underline{-3} \end{cases}$$

NO SOLUTIONS

$$\begin{cases} y = x^2 - x - 5 \\ y = \underline{-6} \end{cases}$$

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Two Hamster Commandos have located the Evil Acorn Thief's hideout. Their plan is to blowup the hideout using explosive pinecones. A hamster on the ground lobs an explosive pinecone in the path $y = -x^2 + 8x$ where "y" is vertical feet and "x" is horizontal feet. A hamster in a tree fires a pinecone explosive in the path $y = -2x + 16$ where "y" is vertical feet and "x" is horizontal feet. That said, answer the following....

- Do both Commando Hamsters score a hit on the hideout? Defend mathematically.
- Is it possible the explosives collide with each other prior to reaching the hideout? Why?
- If there is 10 foot tree from where the explosives were launched, could one of the explosive hit it instead of the hideout?

$$y = -x^2 + 8x + 0$$

$$\frac{-8}{-2} = 4$$

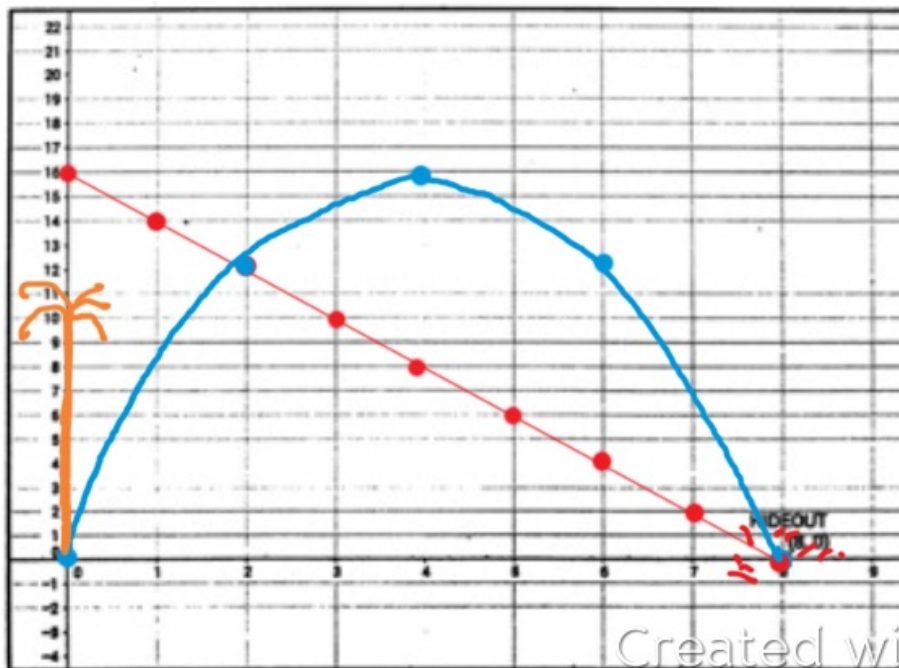
$$-(4)^2 + 8(4)$$

$$-16 + 32 = 16$$

$$(4, 16)$$

y-int

$$-(0)^2 + 8(0) = 0$$



- yes, both hamsters hit the hideout after 8 horizontal feet

- yes, both hamsters are at a height of 12 feet after 2 horizontal feet

- yes, the parabola launches below 10 feet