DO NOW:

Solve for x:

$x^2 - 6x = -x - 4$

$+x+4 \quad +x+4$

$x^2 - 5x + 4 = 0$

$4 \mid \cdot 5$

$(x-1)(x-4) = 0$

$x-1=0 \quad | \quad x-4=0$

$x=1 \quad | \quad x=4$

HW Answers

1. 2
2. 1
3. 4
4. 3
5. 2
6. 2

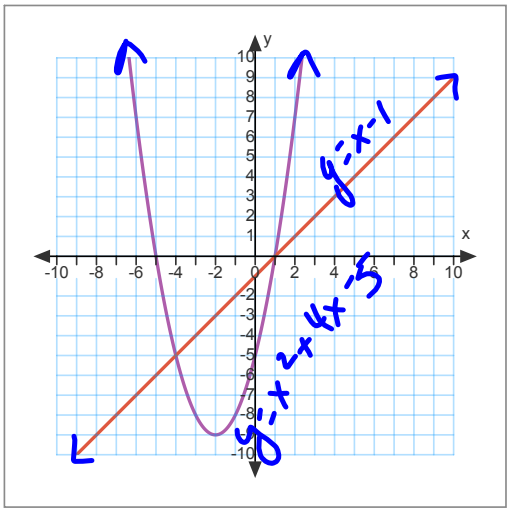
7. $y = x^2 + 4x - 5$

$y = x - 1$

Solutions

(1,0)

(-4, -5)

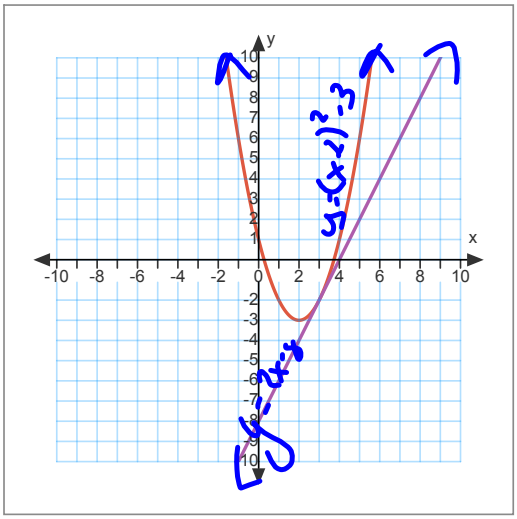


8.

(3,-2)

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

$y = 2x - 8$



Quadratic-Linear Systems Algebraically

STEPS

1) Make sure that the quadratic equation is in standard form: $y = ax^2 + bx + c$

2) Make sure that the linear equation is in slope-intercept form: $y = mx + b$

3) Set the two equations equal to each other

4) Solve the resulting quadratic equation using any method (factor or quadratic formula)

5) Substitute the x-values into one of the equations to solve for the y-values

6) Check your solutions

Apr 26-5:13 PM

Example 1

Solve the following system algebraically.

$y = x^2 + 3x + 2$

$2x + y = -4$

$-2x \quad -2x$

$y = -2x - 4$

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

$+2x + 4 \quad +2x + 4$

$x^2 + 5x + 6 = 0$

$(x + 3)(x + 2) = 0$

$x + 3 = 0 \quad | \quad x + 2 = 0$

$x = -3 \quad | \quad x = -2$

$x = -3$

$2x + y = -4$

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

$-6 + y = -4$

$+6 \quad +6$

$y = 2$

$(-3, 2)$

$x = -2$

$2x + y = -4$

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

$-4 + y = -4$

$+4 \quad +4$

$y = 0$

$(-2, 0)$

Quadratic

$y = x^2 + 3x + 2$

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

$2 = 9 - 9 + 2$

$2 = 2$ ✓

Linear

$2x + y = -4$

$2(-3) + (2) = -4$

$-6 + 2 = -4$

$-4 = -4$ ✓

Quadratic

$y = x^2 + 3x + 2$

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

$0 = 4 - 6 + 2$

$0 = -2 + 2$

$0 = 0$ ✓

Linear

$2x + y = -4$

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

$-4 = -4$ ✓

Apr 26-5:13 PM

Example 3

Solve the following system algebraically.

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

$y + 3 = x \Rightarrow y = x - 3$

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

$-x + 3 \quad\quad -x + 3$

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

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

$+x^2 \quad +x^2$

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

Discriminant

$b^2 - 4ac$

$(-3)^2 - 4(1)(4)$

$9 - 16$

-7

No Solution