

Simplify:

$a+bi$

NO CALC!

Warm Up Fri wk 12

1. i^{61}
 i

2. $(4-3i)(2-i)$
 $5-10i$

3. $(-2+3i)-(-8-3i)$
 $6+6i$

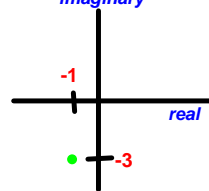
4. $\frac{6+3i}{2i}$

$\frac{-3+6i}{-2} = \frac{3-6i}{2} = \frac{3}{2} - 3i$

5. $\frac{10}{3-i}$
 $3+i$

6. $(-5-2i)+(4-i)$
Graph this answer
 $-1-3i$

7. $|4-i|$
 $\sqrt{17}$



Factor:

8. $343w^3 - y^{12}$

9. $6aw - 8cw - 4cy + 3ay$

10. $6y^3 + 27y^2 - 21y$

$(7w - y^4)(49w^2 + 7wy^4 + y^8)$

$(3a - 4c)(2w + y)$

$3y(2y^2 + 9y - 7)$

Ex. 3

$$\begin{cases} y = -x^2 - x + 6 & \leftarrow y_1 \\ y = x + 3 & \leftarrow y_2 \end{cases}$$

1. Let's graph on our graphing calculator to see how many solutions. (Sketch it)

subst

2. Solve algebraically.

$$\begin{array}{r} x+3 = -x^2 - x + 6 \\ x^2 + x - 6 \quad \quad x^2 + x - 6 \end{array}$$

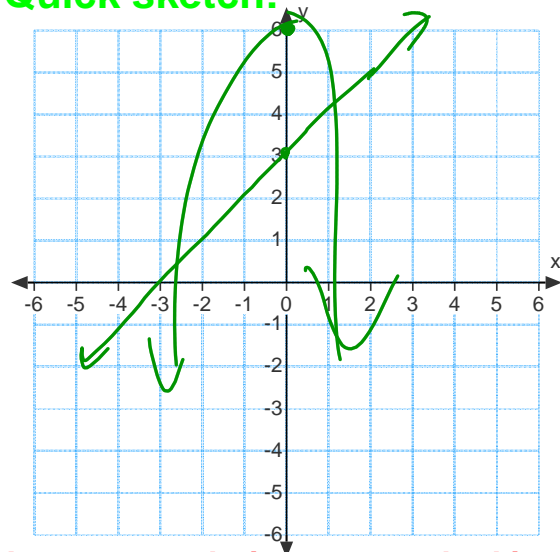
$$\begin{aligned} x^2 + 2x - 3 &= 0 \\ (x+3)(x-1) &= 0 \\ x+3=0 \text{ or } x-1 &= 0 \\ x=-3 \text{ or } x=1 & \end{aligned}$$

subst

$$\begin{array}{ll} y = x+3 & y = x+3 \\ y = -3+3 & y = 1+3 \\ y = 0 & y = 4 \end{array}$$

$$\boxed{(-3, 0), (1, 4)}$$

Quick sketch:



How many solutions are we looking for?

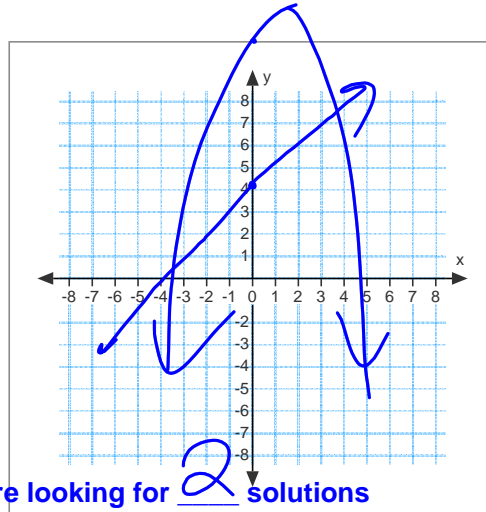
Please take out your calculator and your homework paper. We will start your homework together.

Let's make a sketch so we know how many solutions we have

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$$y = -x^2 + 2x + 10$$

$$y = x + 4$$



We are looking for 2 solutions

Now, solve using algebra:

$$y = -x^2 + 2x + 10$$

$$y = x + 4$$

Use substitution

CHECK: (3,7) (-2,2)

$-x^2 + 2x + 10 = x + 4$
 now, solve for x
 $+x^2 - 2x + x^2 - 10 - 1x - 10$

$0 = x^2 - x - 6$
 $0 = (x-3)(x+2)$
 $x-3=0$ or $x+2=0$
 $x=3$ or $x=-2$

find y
 $y = x + 4$
 $y = 3 + 4$
 $y = 7$
 $(3, 7)$
 $y = -2 + 4$
 $y = 2$
 $(-2, 2)$

$y = -x^2 + 2x + 10$

x y
 $(3, 7)$
 $7 = -(3)^2 + 2(3) + 10$
 $7 = -(9) + 6 + 10$
 $7 = 7$

x y
 $(-2, 2)$
 $2 = -(-2)^2 + 2(-2) + 10$
 $2 = -(4) - 4 + 10$
 $2 = 2$

$y = x + 4$

x y
 $(3, 7)$
 $7 = 3 + 4$
 $7 = 7$

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