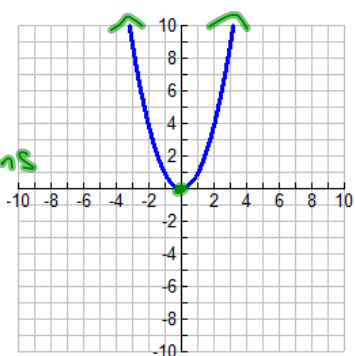


 <http://youtu.be/OFSrINhfNsQ>

 <http://youtu.be/hHfUu4RaVrE>

How many ^{x-int} solutions does this graph have? $x=0$ $x=0$

Quad.
 x^2
2 solutions



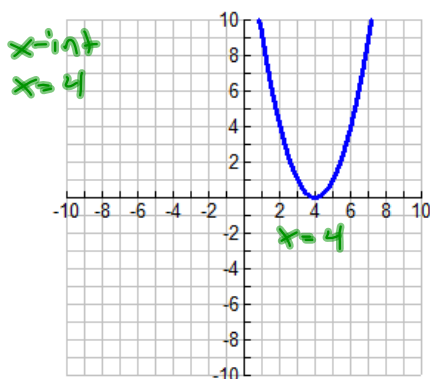
What are the factors?

$(x)(x)$

Write the polynomial function.

$y = x^2$ parent

How many solutions does this graph have? $x=4$



What are the factors?

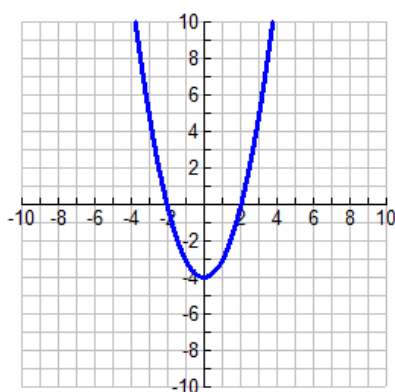
$$\underline{(x-4)(x-4)}$$

FOIL

Write the polynomial function.

→ $x^2 - 8x + 16$

How many solutions does this graph have? 2



x-int: $x=2$ $x=-2$

What are the factors?

$(x-2)(x+2)$

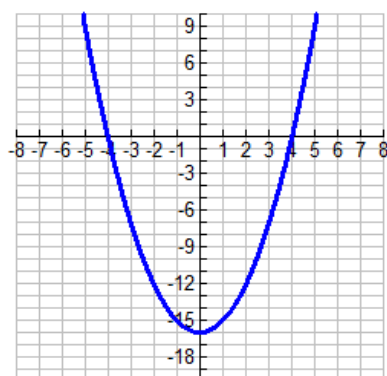
~~x^2+2x~~ FOIL

Write the polynomial function.

x^2-4

why?

How many solutions does this graph have? 2



$x = -4$ $x = 4$

What are the factors?

$(x+4)(x-4)$

FOIL

Write the polynomial function.

$x^2 - 16$

What conclusion can you make about the functions and their factors?

$$(x+5)(x-5)$$
$$x^2 - 25$$

what happens?
* middle terms
cancel out

Practice

$$x^2 - 25 = (x - 5)(x + 5)$$

↑
magic
" - "

negative

why?

$$x^2 - 25 = 0$$

$$\frac{\quad + 25 \quad + 25}{\quad}$$

$$\sqrt{x^2} - \sqrt{25}$$

$$x = \pm 5$$

$$x = 5 \quad x = -5$$

$$(x - 5)(x + 5)$$

$$9x^2 - 144$$

①

* ① "-" must have a minus
only two terms

* ② # x^2 - #

↑ ↑

$\sqrt{\#}$ $\sqrt{\#}$

$$9x^2 - 144$$

$$\sqrt{9} \quad \sqrt{144}$$

$$= 3 \quad = 12$$

$$(3x + 12)(3x - 12)$$

$$x^2 - 36 = 0$$

YES !!

$$x^2 - 36 = 0$$

$$x^2 = 36$$

$$x = \pm \sqrt{36}$$

$$x = \pm 6$$

$$(x+6)(x-6)$$

$$\left. \begin{array}{l} x^2 + 36 = 0 \\ \text{No !!} \\ x^2 + 36 = 0 \\ x^2 = -36 \\ x = \pm \sqrt{-36} \\ x = \pm i\sqrt{36} \text{ * imaginary} \\ x = \pm 6i \\ (x+6i)(x-6i) \end{array} \right\}$$

$$36x^2 - 49$$

$$(6x + 7)(6x - 7)$$

$$\sqrt{27} = \underline{\underline{3\sqrt{3}}}$$

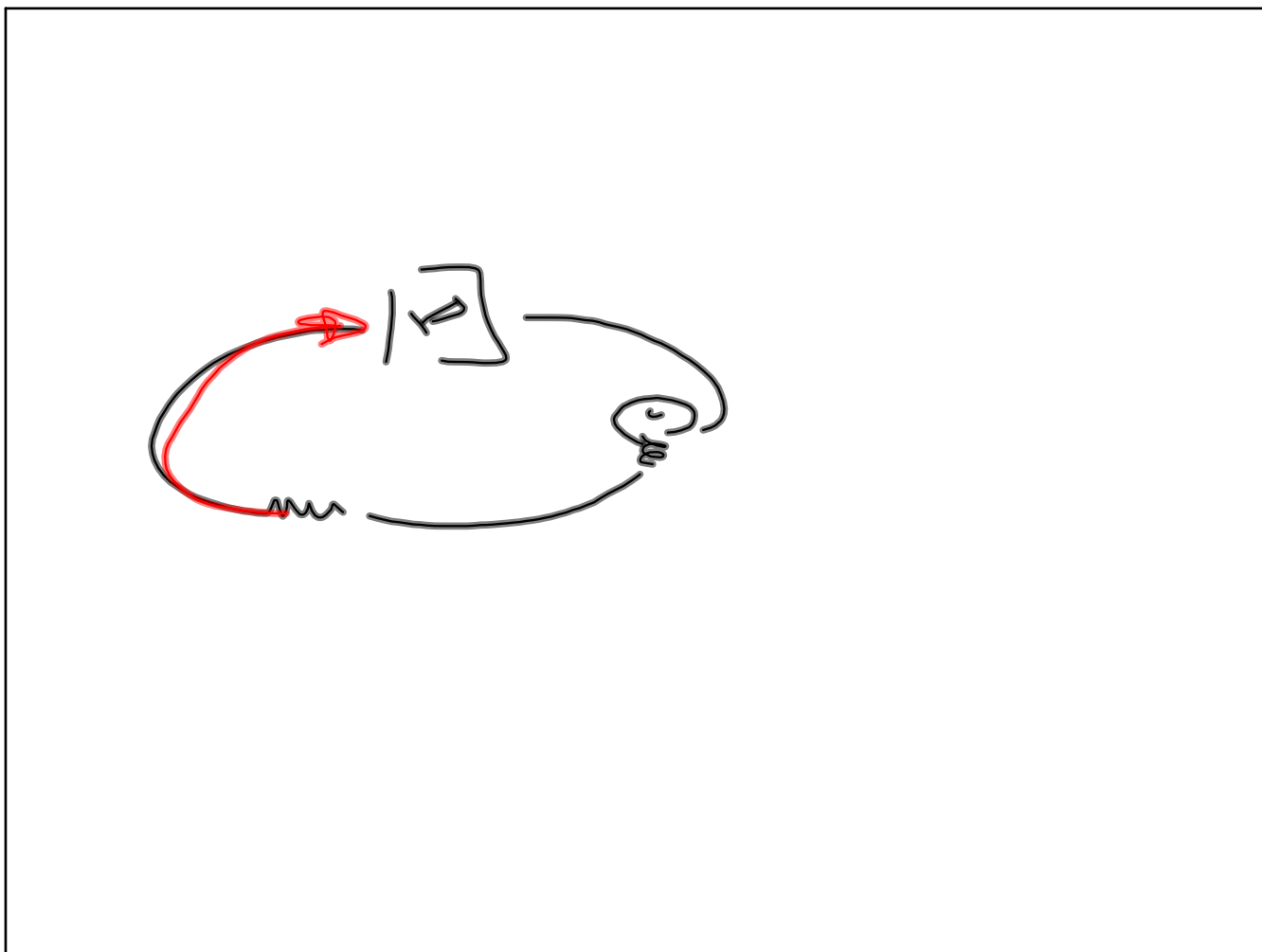
$$27x^2 - 25$$

$$(3x - 5)(3x + 5) = 9x^2 - 25$$

$$(4x - 5)(4x + 5) = 16x^2 - 25$$

$$(6x - 5)(6x + 5) = 36x^2 - 25$$

$$\begin{array}{l} 27x^2 - 25 \\ \underline{\underline{\text{GCF}}} \\ (-x^2 -) \end{array}$$



$$\begin{array}{l} \text{GCF} \\ \underline{2} \end{array} \frac{32x^2}{2} - \frac{50}{2} = 2(16x^2 - 25)$$
$$\underline{2} (\underline{4x} - \underline{5})(\underline{4x} + \underline{5})$$

$$32 \div 2 = 16$$

$$50 \div 2 = 25$$

Factor each completely.

1) $n^2 - 2n + 1$

2) $a^2 - 1$

3) $100v^2 - 36$

4) $x^2 - 16$

5) $9b^2 - 25$

6) $8n^2 - 18$

7) $25m^2 - 4$

8) $n^2 - 8n + 16$

9) $x^2 - 25$

10) $a^2 + 8a + 16$

The screenshot shows a software window titled "Infinite Algebra 1" with a "SMART Ink" logo in the top right corner. The window has a control bar with the following options: Question numbers, Lines, Show answers, Directions, and Changing questions hides answers. There is also a "Zoom:" slider, a "Jump" button with left and right arrows, a "+up" dropdown menu, and a "Close" button.

The main area is divided into four quadrants, each with the instruction "Factor each completely." and a problem:

- Top-left: 1) $n^2 - 2n + 1$
- Top-right: 2) $a^2 - 1$
- Bottom-left: 3) $100v^2 - 36$
- Bottom-right: 4) $x^2 - 16$

Each problem is followed by three horizontal lines for writing the answer. At the bottom of the window is a Windows taskbar with various application icons and a system tray showing the time as 1:04 PM on 2/8/2013.

Infinite Algebra 1 SMART Ink

Question numbers
 Lines
 Show answers
 Changing questions hides answers
Zoom:
 Jump

<p>Factor each completely. <i>Not correct</i></p> <p>1) $n^2 - 2n + 1$</p> $\begin{cases} 1 \cdot 1 & -1 \cdot -1 \\ 1+1=2 & -1 + -1 = -2 \end{cases}$ $\begin{matrix} (n-1)(n-1) \\ (x-1)(x-1) \end{matrix}$	<p>Factor each completely. ✓</p> <p>2) $a^2 - 1$</p> $\sqrt{1a^2 - 1}$ $(1a-1)(1a+1)$ $(a-1)(a+1)$
<p>Factor each completely. ✓</p> <p>3) $100v^2 - 36$</p> $\sqrt{100v^2 - 36}$ $(10v-6)(10v+6)$	<p>Factor each completely. <i>Not correct</i></p> <p>4) $x^2 - 16$</p> $(x-4)(x+4)$

Windows taskbar: 1:04 PM 2/8/2013

Answers to Assignment (ID: 1)

- | | | | |
|-------------------|--------------------|--------------------|-----------------|
| 1) $(n-1)^2$ | 2) $(a+1)(a-1)$ | 3) $4(5v+3)(5v-3)$ | 4) $(x+4)(x-4)$ |
| 5) $(3b+5)(3b-5)$ | 6) $2(2n+3)(2n-3)$ | 7) $(5m+2)(5m-2)$ | 8) $(n-4)^2$ |
| 9) $(x+5)(x-5)$ | 10) $(a+4)^2$ | | |

Factor each completely.

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

Factor each completely.

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

Factor each completely.

3) $100v^2 - 36$
 $4(5v + 3)(5v - 3)$

Factor each completely.

4) $x^2 - 16$
 $(x + 4)(x - 4)$

Factor each completely.

5) $9b^2 - 25$

$(3b + 5)(3b - 5)$

Factor each completely.

6) $8n^2 - 18$

$2(2n + 3)(2n - 3)$

Factor each completely.

7) $25m^2 - 4$

$(5m + 2)(5m - 2)$

Factor each completely.

8) $n^2 - 8n + 16$

$(n - 4)^2$

Factor each completely.

9) $x^2 - 25$

$(x + 5)(x - 5)$

Factor each completely.

10) $a^2 + 8a + 16$

$(a + 4)^2$

