

Unit 5: Graphing Using Transformations

Day 5: Completing the Square

Today we will....

1. Learn how to "Complete the Square" on a trinomial

Perfect Square Trinomials:

$$x^2 + 6x + 9$$

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

$$x^2 - 8x + 16$$

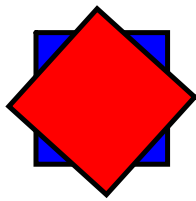
$$=(x - 4)^2$$

We are going to use this factoring technique to put quadratics into vertex form by "completing the square"

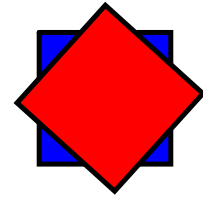
Complete the square of the following
(determine what value you need to make the factor a perfect square)

a) $x^2 - 10x + \underline{\hspace{2cm}}$

b) $x^2 + 6x + \underline{\hspace{2cm}}$



Completing the Square



$x^2 + bx + c = 0$... Standard Form

$$y = 2x^2 - 12x + 31$$

- Add a set of brackets around the variable terms

$$y = 2(\quad - \quad) + 31$$

- Common factor out any coefficient of x^2 out of the FIRST TWO terms only!

$$y = 2(x^2 - 6x \quad) + 31$$

- Add & Subtract the constant that makes a perfect square
{Hint: $(b \div 2)^2 = c$ }

$$y = 2(x^2 - 6x \quad) \quad + 31$$

- Distribute out the extra constant leaving the perfect square in brackets

$$y = 2(x - \quad)^2$$

- Write the perfect square in factored form and simplify

$y = a(x - h)^2 + k$... Vertex Form
Vertex is (h, k)

$$1) y = x^2 + 6x - 7$$

$$2) y = x^2 - 12x - 11$$

$$3) y = 2x^2 + 16x - 5$$

$$4) y = -3x^2 + 18x - 9$$

Homework:
Textbook Page 390-391
#1, 2, 4 bc, 8 bc



Attachments

9.3 Worksheet.doc

9.3 Worksheet #2.doc

9.4 Lab.doc