

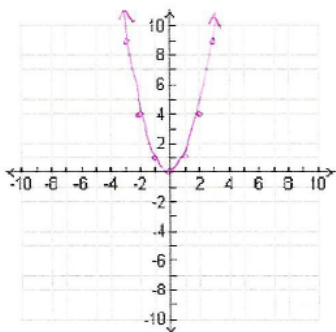
Module 2 Test Day

Get out your Module 2 Study Guides and check your answers!

SECONDARY MATH II
Module 2 Study Guide: Structure of Expressions

Directions: Show ALL work and make sure to write clearly, graph your functions neatly, and label appropriately.

1. Graph $f(x) = x^2$.



Describe how the following functions have been transformed (translated, reflected, rotated, dilated) from $f(x) = x^2$.

2. $f(x) = -x^2$

reflected across x-axis

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

↑ 3

4. $f(x) = 3x^2$

dilated 3

5. $f(x) = (x - 3)^2$

→ 3

Identify a, b, and c using $f(x) = ax^2 + bx + c$.

6. $f(x) = -2x^2 + 3x + 2$

a = -2
b = 3
c = 2

7. $f(x) = x^2 - 5x + 4$

a = 1
b = -5
c = 4

8. $f(x) = -x^2 + 8x - 9$

a = -1
b = 8
c = -9

Are the following perfect squares? If so, draw the diagram for the expression and write the trinomial as a product of two binomials. If not, write what you would need to add or subtract to complete the square.

9. $f(x) = x^2 + 6x + 9$

Perfect square? yes

Diagram:



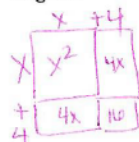
Product of binomials (side lengths):

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

10. $f(x) = x^2 + 8x + 16$

Perfect square? yes

Diagram:



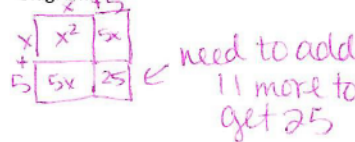
Product of binomials (side lengths):

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

11. $f(x) = x^2 + 10x + 14$

Perfect square? no

Diagram:



Product of binomials (side lengths):

$(x+5)(x+5) = +11$

$(x+5)^2 = 11$
 $(x+5)^2 - 11 = 0$

$x^2 + 10x + 14 + 11 = 0$

$x^2 + 10x + 25 = 11$

$(x+5)(x+5) = 11$

$(x+5)^2 - 11 = 0$

$f(x) = (x+5)^2 - 11$

vertex: $(-5, -11)$

