

Algebra 2 – Burrus  
Homework – Multiplying Binomials

Name \_\_\_\_\_  
Period \_\_\_\_\_ Date \_\_\_\_\_

1. Multiply the following:

a.  $(x + 3)(x + 4) =$

b.  $(x + 3)(x - 4) =$

c.  $(x - 3)(x - 4) =$

d.  $(2x + 3)(3x + 2) =$

e.  $(x - 2)(x^2 + 2x + 4) =$

2. Check your answer to part **e** above by substituting the number 3 for  $x$  into both the original function, and your answer. What is the answer to each?

3. Multiply the following by using the formulas at right:

a.  $\left(x + \frac{3}{2}\right)^2 =$

b.  $\left(x - \frac{3}{2}\right)^2 =$

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

d.  $(x - 3)^2 =$

e.  $(3 - x)^2 =$

f. Did you get the same answer for **d** and **e**? Why or why not?

g.  $\left(x + \frac{1}{2}\right)\left(x + \frac{1}{2}\right) =$

h.  $\left(x + \frac{1}{2}\right)\left(x - \frac{1}{2}\right) =$

i.  $(\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3}) =$

*Important formulas:*

$$(x + a)^2 = x^2 + 2ax + a^2$$

$$(x - a)^2 = x^2 - 2ax + a^2$$

$$(x + a)(x - a) = x^2 - a^2$$

4. Multiply the following:

a.  $(2x + 5)(2x - 5) =$

b.  $(3x - 2)^2 =$

c.  $(x - \sqrt{2})(x + \sqrt{2}) =$

d.  $(10x + 9)^2 =$

5. Now try going backwards. Factor the following expressions by using one of the formulas:

a.  $x^2 - 8x + 16 =$

Check by multiplying back:

b.  $x^2 - 25 =$

Check by multiplying back:

c.  $x^2 + 2x + 1 =$

Check by multiplying back:

d.  $x^2 - 20x + 100 =$

Check by multiplying back:

e.  $4x^2 - 9 =$

Check by multiplying back:

6. Multiply:  $(x + 3)^3 = (x + 3)^2(x + 3) =$