

First
Outer
Inner
Last

4. Multiply the polynomials

a. $(x+2)(x+4)$

$$x^2 + 4x + 2x + 8 = x^2 + 6x + 8$$

b. $(x-3)(x-5)$

$$x^2 - 5x - 3x + 15$$

$$x^2 - 8x + 15$$

	x	-3
x	x^2	$-3x$
-5	$-5x$	15

$$x^2 - 8x + 15$$

c. $(x+6)(x-3)$

$$x^2 - 3x + 6x - 18$$

$$x^2 + 3x - 18$$

d. $(2x-7)(x+2)$

$$2x^2 + 4x - 7x - 14$$

$$2x^2 - 3x - 14$$

e. $(3x+1)(2x+9)$

$$6x^2 + 27x + 2x + 9$$

$$6x^2 + 29x + 9$$

f. $3[(x+8)(x-6)]$

$$3(x^2 - 6x + 8x - 48)$$

$$3x^2 + 6x - 144$$

$$3(x^2 + 2x - 48)$$

g. $-4(2x-1)(x+5)$

$$-4(2x^2 + 10x - x - 5)$$

$$-8x^2 - 36x + 20$$

$$-4(2x^2 + 9x - 5)$$

h. $(x+3)(x^2 - 2x + 1)$

$$x^3 + x^2 - 5x + 3$$

i. $(3x-1)(x^2 - x + 5)$

$$3x^3 - 4x^2 + 16x - 5$$

$$(x^2 + 3x - 10)(x - 6)$$

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

$$x^3 + 3x^2 - 10x$$

$$\begin{array}{r} -6x^2 - 18x + 60 \\ \hline x^3 - 3x^2 - 28x + 60 \end{array}$$

$$\begin{array}{l} (x - 2)(x + 7) \\ x^2 + 7x - 2x - 14 \end{array}$$

$$(x + 5)^2 \neq x^2 + 25$$

Bad Math!

j. $(x - 2)(x + 5)(x - 6)$

$$\begin{array}{l} (x - 2)(x^2 - 6x + 5x - 30) \\ (x - 2)(x^2 - x - 30) \end{array}$$

$$\begin{array}{r} x^3 - x^2 - 30x \\ -2x^2 + 2x + 60 \\ \hline x^3 - 3x^2 - 28x + 60 \end{array}$$

k. $(x - 6)(x - 2)(x + 7)$

$$(x - 6)(x^2 + 5x - 14)$$

$$\begin{array}{r} x^3 + 5x^2 - 14x \\ -6x^2 - 30x + 84 \\ \hline \end{array}$$

$$x^3 - x^2 - 44x + 84$$

5. Special Products

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

a. $(x + 5)^2$ $(x + 5)(x + 5)$ $x^2 + 10x + 25$

$$x^2 + 5x + 5x + 25$$

b. $(x - 3)^2$ $(x - 3)(x - 3)$ $x^2 - 3x - 3x + 9$

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

c. $(x + 7)^2$ $(x + 7)(x + 7) = x^2 + 14x + 49$

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

e. $(x + 4)(x - 4)$

f. $(x - 8)(x + 8)$