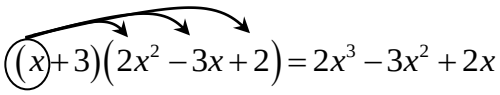
# Multiplying a Binomial and a Trinomial

Remember the distributive property? We use this to multiply polynomials. Let's take a look at an example…

**Multiply** $(x+3)(2x^2-3x+2)$

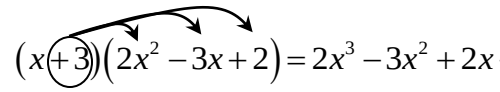
Take each term of the first polynomial and distribute it to each of the terms in the second polynomial.

First, distribute the *x*. Multiply the *x* times all of the terms in the second polynomial.



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

Next, distribute the + 3. Multiply the 3 times all of the terms in the second polynomial.



$$(x+3)(2x^2-3x+2)=2x^3-3x^2+2x+6x^2-9x+6$$

Combine the like terms.

$$(x+3)(2x^2-3x+2)=2x^3\underline{-3x^2}\ \underline{+2x}+\underline{6x^2}\ \underline{-9x}+6$$

So our answer is $(x+3)(2x^2-3x+2)=$ $\boxed{2x^3+3x^2-7x+6}$

## Try This

1. Multiply $(x+1)(x^2-2x-5)$

2. Multiply $\left(x^2+3x-8\right)\left(2x+5\right)$

3. Multiply $\left(3x-1\right)\left(x^2-7x+3\right)$

4. Multiply $(3x^2-4x-2)(2x-3)$

**Answers**

1. $x^3-x^2-7x-5$
2. $2x^3+11x^2-x-40$
3. $3x^3-22x^2+16x-3$
4. $6x^3-17x^2+8x+6$