## P.5 Factoring Polynomials

GOALS: Factor Polynomials using:

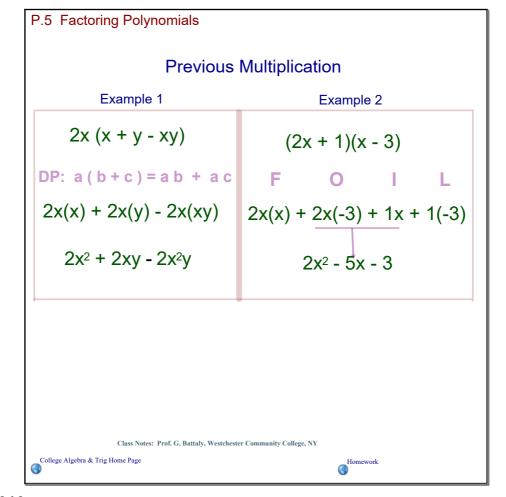
- 1. Distributive Property (common factors)
- 2. Trial and Error (trinomials)
- 3. Factor by Grouping (trinomials)

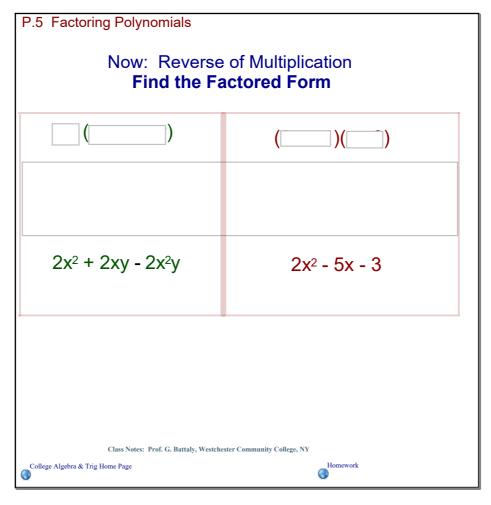
Study P.5 CVC 1-7, # 1, 5, 9, ....37, 39-55, 59, 65, 69, 73, ... 113

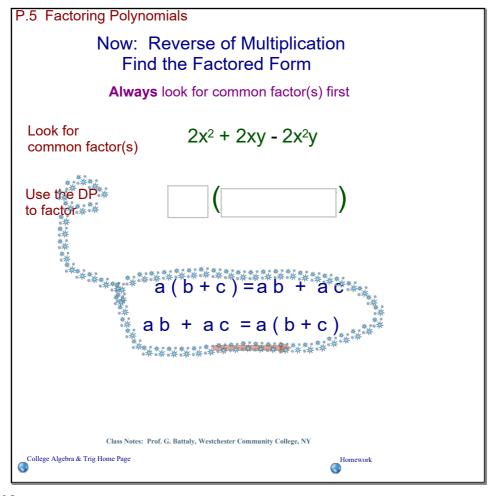
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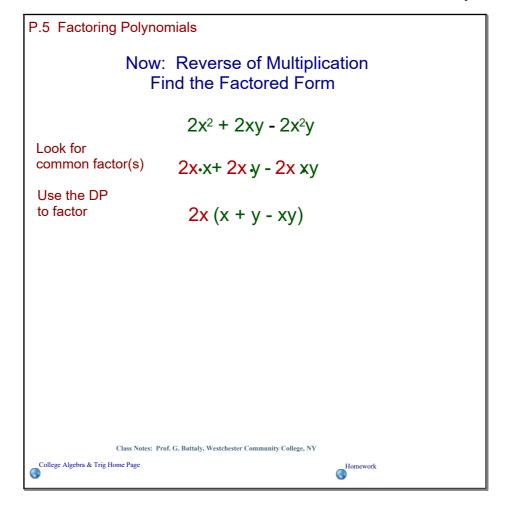
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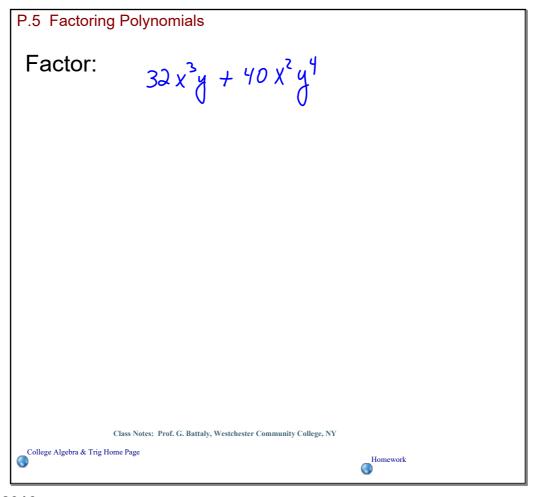


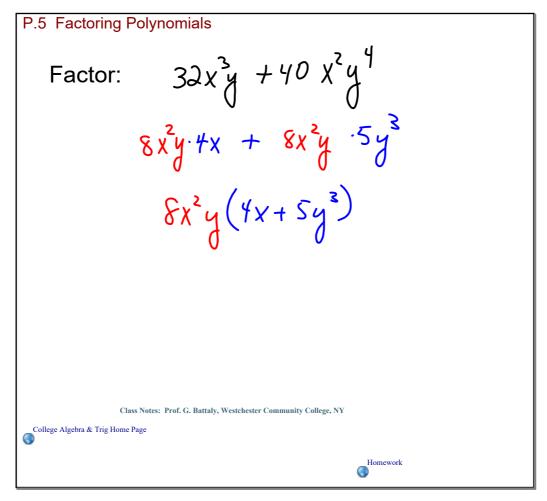


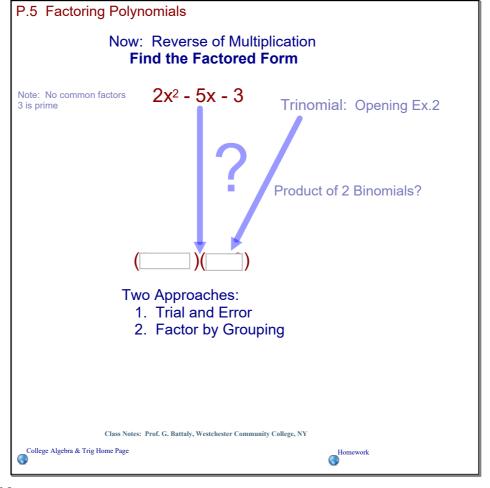


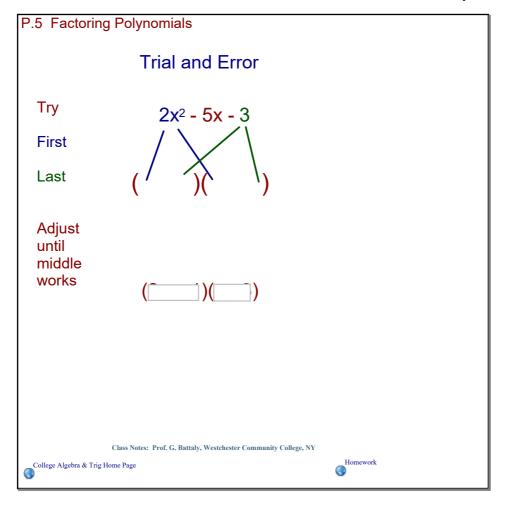


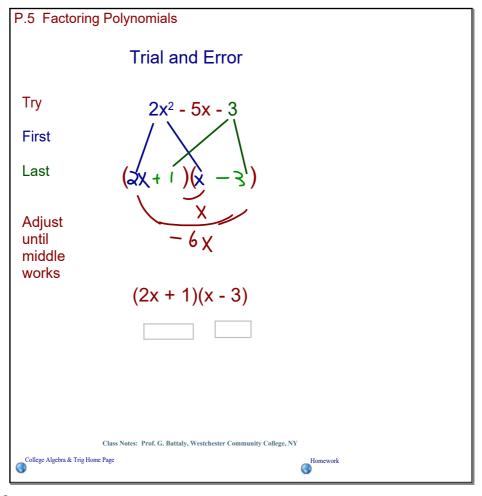


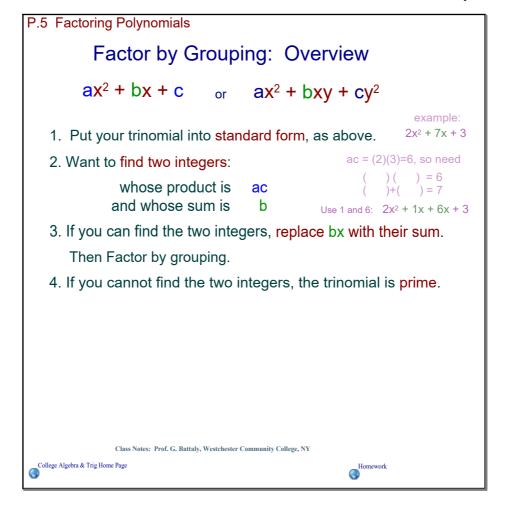


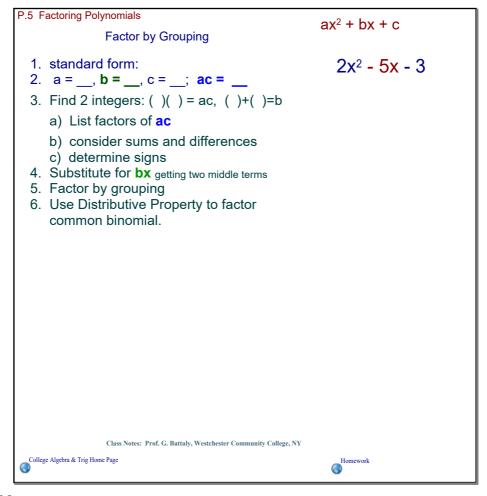


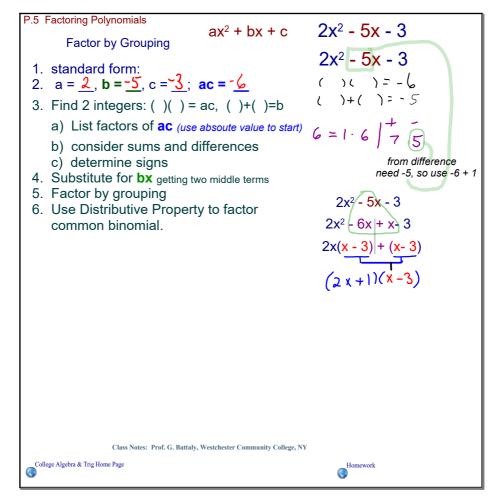


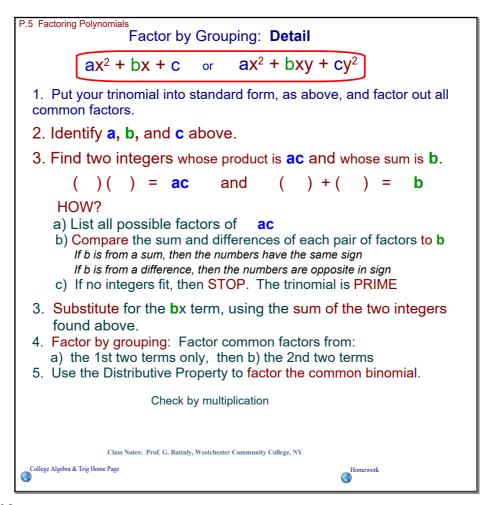




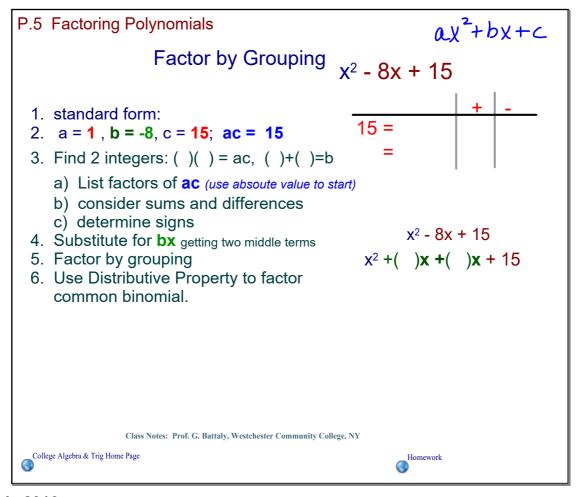


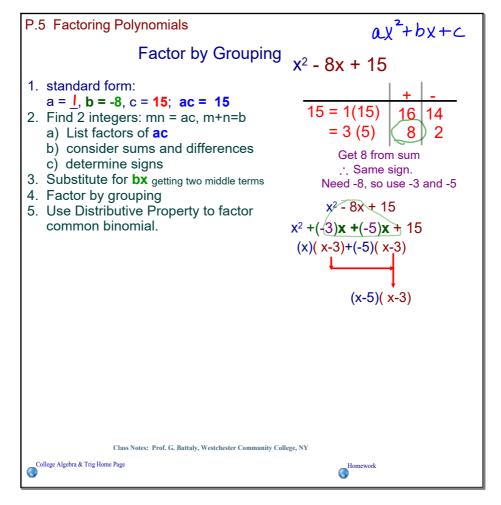


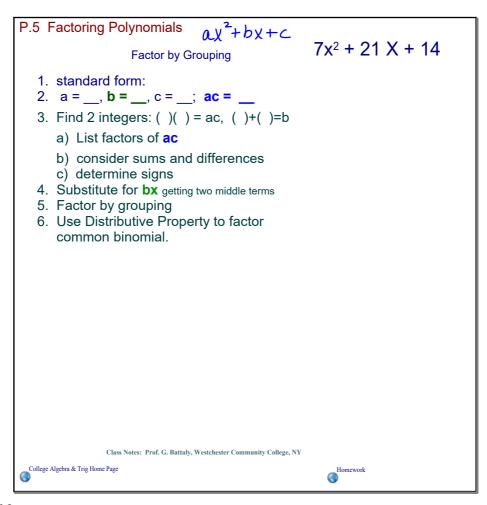


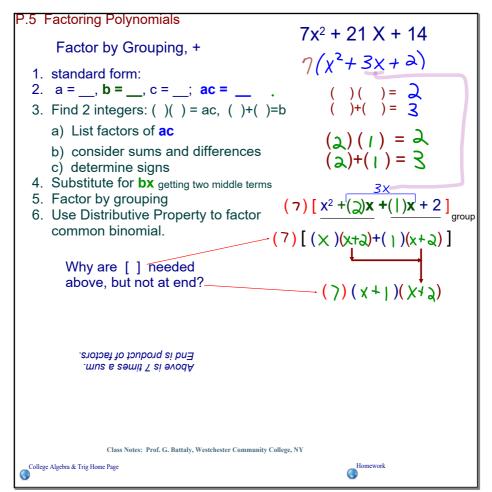


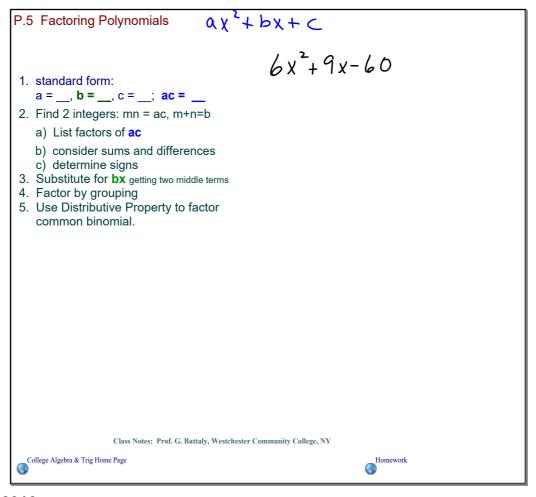
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P.5 Factoring Polynomials
            Factor by Grouping: Detail
                                                  x^2 + 3x - 18
  1. In Standard form
  2. a=1, b=3, c=-18, ac=-18
  3. Find two integers whose product is -18 and whose sum is 3.
            )() = ac
                                           ( ) + (
                                 and
  a) List all possible factors of 18
                                                           Sum Diff
     (easiest to start with absolute value)
                                             18 = 1(18)
                                                            19
  b) Compare the sum and differences
                                                  = 2(9)
                                                            11
       of each pair of factors to b
  c) b = 3 and get 3 from difference
      : integers have opposite signs;
      since b is positive -> use +6 and -3
         results in (6)(-3) = -18 and 6 + (-3) = 3
  4. Substitute for the bx with 6x - 3x
  5. Factor by grouping: Common factors from: x^2 + 6x - 3x - 18
    a) the 1st two terms only, then
                                               x(x + 6)
     b) the 2nd two terms
                                                      -3(x+6)
  6. Use the Distributive Property to factor
                                                x(x + 6) - 3(x + 6)
     the common binomial, (x + 6).
  7. Check by multiplication (not required)
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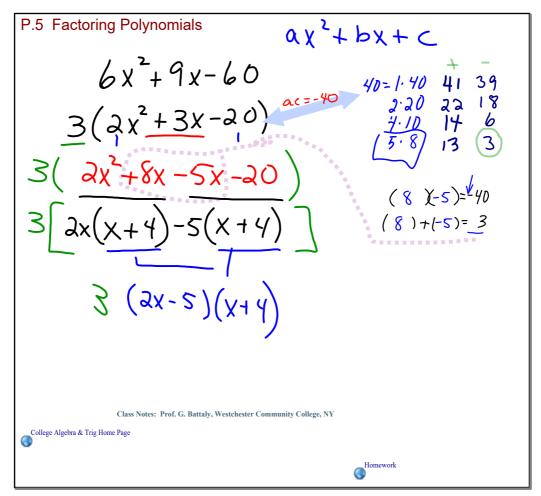


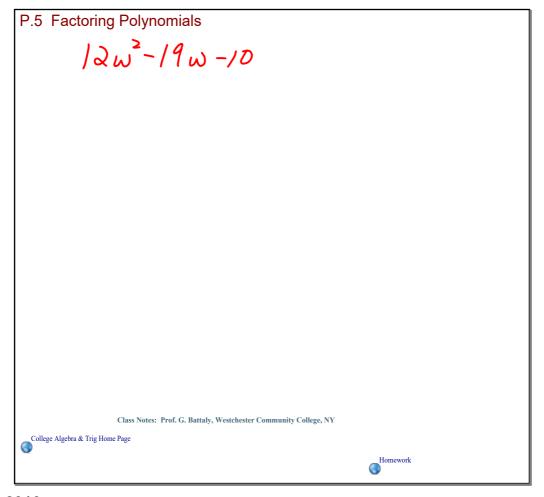


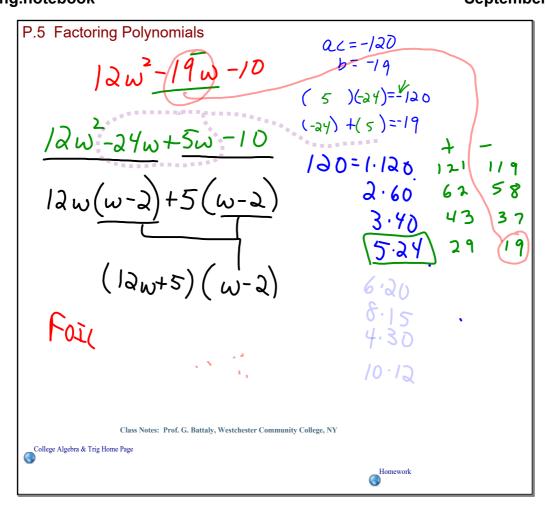


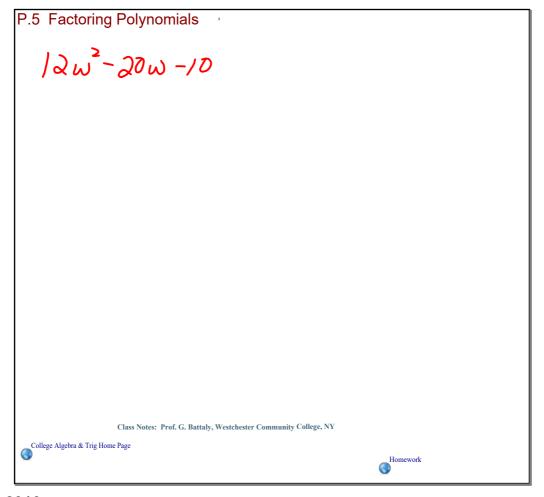


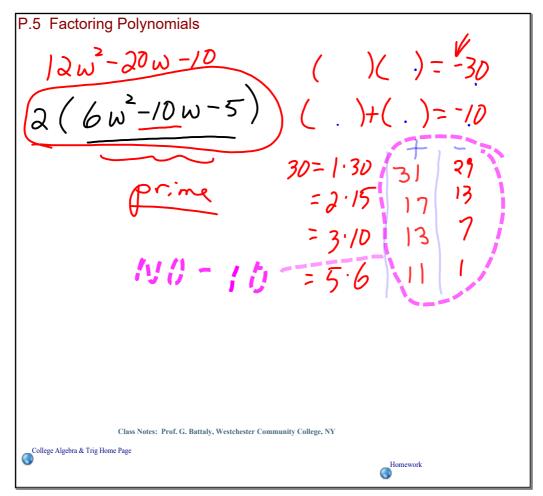


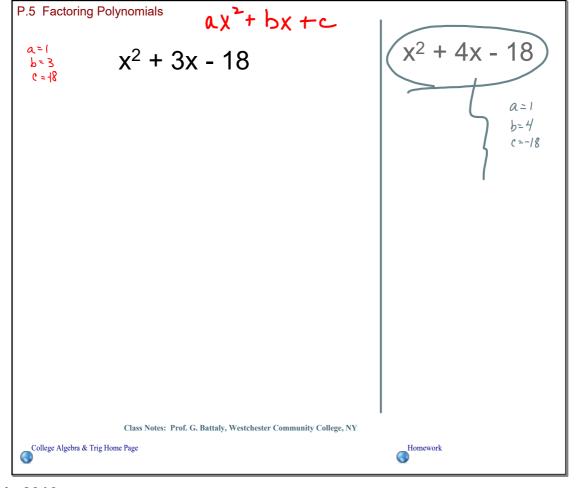


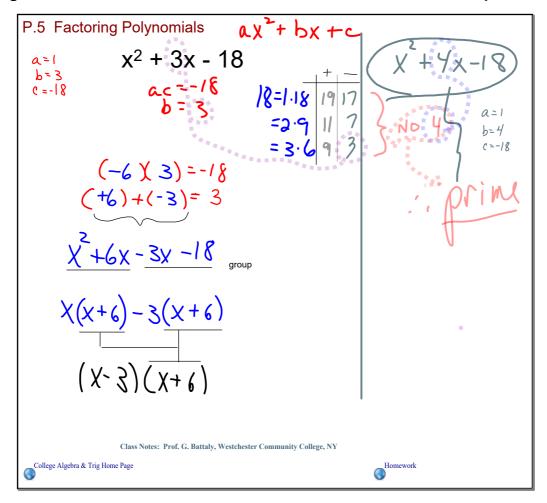


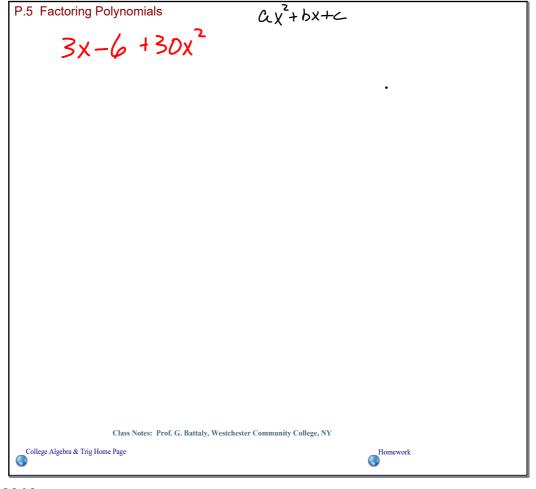












P.5 Factoring Polynomials
$$3x - 6 + 30x^{2}$$

$$30x^{2} + 3x - 6$$

$$3(10x^{2} + x - 2)$$

$$3[10x^{2} - 4x + 5x - 2]$$

$$3[2x(5x - 2) + 1(5x - 2)]$$
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P.5 Factoring Polynomials
$$8 x^{2} + 37x - 15$$

$$8x^{2} - 3x + 40x - 15$$

$$\times (8x - 3) + 5(8x - 3)$$

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