

# Homework 1.3 # 11, 17, 21, 25, 33, 37, 51, 57, 65, 71, 83, 91, 119

11)  $x - x^2 + x^3 - x^4$

Type: four terms

Terms:  $-x^4, x^3, -x^2, x$

Degree: 4

17)  $(x^3 + 6x^2 - 4x + 7) - (3x^2 + 2x - 4)$   
 $= x^3 + 3x^2 - 6x + 11$

21)  $2(2-5t) + t^2(t-1) - (t^4-1)$   
 $= 4 - 10t + t^3 - t^2 - t^4 + 1$   
 $= -t^4 + t^3 - t^2 - 10t + 5$

25)  $(3x+5)(2x-1)$

|                         |             |            |            |
|-------------------------|-------------|------------|------------|
| F                       | O           | I          | L          |
| $(3x)(2x)$              | $+(3x)(-1)$ | $+(5)(2x)$ | $+(5)(-1)$ |
| $= 6x^2 - 3x + 10x - 5$ |             |            |            |
| $= 6x^2 + 7x - 5$       |             |            |            |

33)  $(2x+3y)^2$      $A=2x$      $B=3y$   
 $= (2x)^2 + 2(2x)(3y) + (3y)^2$   
 $= 4x^2 + 12xy + 9y^2$

37)  $(3x-4)(3x+4) = (3x)^2 - (4)^2$   
 $= 9x^2 - 16$

\* another difference of squares example

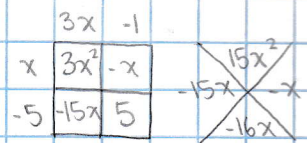
38)  $(2y+5)(2y-5) = (2y)^2 - (5)^2$   
 $= 4y^2 - 10$

51)  $y^{1/3}(y^{2/3} + y^{5/3}) = y^{2/3} + y^{6/3} = y^{2/3} + y$

57)  $((x-1) + x^2)((x-1) - x^2)$   
 $= (x-1)^2 - (x^2)^2$   
 $= -x^4 + x^2 - 2x + 1$

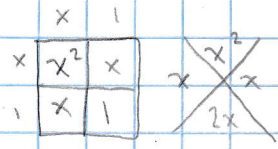
65)  $2x^2y - 6xy^2 + 3xy$   
 $= xy(2x - 6y + 3)$

71)  $3x^2 - 16x + 5$   
 $= (x-5)(3x-1)$



83)  $x^3 + 4x^2 + x + 4$   
 $= (x^3 + x) + (4x^2 + 4)$   
 $= x(x^2 + 1) + 4(x^2 + 1)$   
 $= (x+4)(x^2 + 1)$

91)  $x^{-3/2} + 2x^{-1/2} + x^{1/2}$   
 $= x^{1/2} + 2x^{-1/2} + x^{-3/2}$   
 $= x^{-3/2}(x^2 + 2x + 1)$   
 $= x^{-3/2}(x+1)^2$



119)  $2x^3 + 4x^2 + x + 2$   
 $= (2x^3 + x) + (4x^2 + 2)$   
 $= x(2x^2 + 1) + 2(2x^2 + 1)$   
 $= (x+2)(2x^2 + 1)$

↑ can be factored further under imaginary numbers.