Math 9 - Extra Practice

Factoring Unit

Name: Key

1) Simplify

a) $(m+4)(m-5)$

$m^2-5m+4m-20$

m^2-m-20

b) $-2(x+1)(x+6)$

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

$-2(x^2+7x+6)$

$-2x^2-14x-12$

c) $(4y-1)(3y-2)$

$12y^2-8y-3y+2$

$12y^2-11y+2$

d) $(2x^2-3x+1)(x-2)$

$2x^3-4x^2-3x^2+6x+x-2$

$2x^3-7x^2+7x-2$

e) $(w+3)(w+2)-(w-4)(w-1)$

$w^2+2w+3w+6-[w^2-w-4w+4]$

$w^2+5w+6-[w^2-5w+4]$

$w^2+5w+6-w^2+5w-4 = 10w+2$

2) Factor

a) $2x^2-22x+60$

$2(x^2-11x+30)$ $\times 30$, $+-11$, $-6,-5$

$2(x-6)(x-5)$

b) p^2-25q^2

$(p+5q)(p-5q)$

c) $4m^2+12m-56$

$4(m^2+3m-14)$ $\times -14$, $+3$, $-14,1$; $14,-1$; $-7,2$; $7,-2$

d) $x^2-8x+16$

$(x-4)(x-4)$ $\times 16$, $+-8$, $-4,-4$

$(x-4)^2$

e) $32x^2-50y^2$

$2(16x^2-25y^2)$

$2(4x+5y)(4x-5y)$

f) $6-x+x^2$

x^2-x+6 $\times 6$, $+-1$

can't factor

OVER

3) Factor

a) $6x^2+54$

$6(x^2+9)$

↑ sum of squares (cannot factor further)

(b) $64-w^2$

OR: $64-w^2$

$(8+w)(8-w)$

$-w^2+64$

$-1(w^2-64)$

$-(w+8)(w-8)$

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

$3x^2+6x-9$

$3(x^2+2x-3)$ ×−3, +2 → 3, −1

$3(x+3)(x-1)$

d) $12+9w-3w^2$

$-3w^2+9w+12$

$-3(w^2-3w-4)$ ×−4, +−3 → −4, 1

$-3(w-4)(w+1)$

(e) $-x^2-x+6$

$-1(x^2+x-6)$ ×−6, +1 → 3, −2

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

(f) x^2-2x+8

cannot factor

×8, +−2 → 8, 1; −8, −1; 4, 2; −4, −2

g) $15w^5-30w^3+45w^2$

$15w^2(w^3-2w+3)$ ← cannot factor further

(h) $16x^4y^5-12x^3y^6+18x^5y^3$

$2x^3y^3(8xy^2-6y^3+9x^2)$

(i) $25x-36y^2$

cannot factor

(25x is not a perfect square)