

L2 Factoring Polynomials again



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Lesson 2 Factoring Polynomials...again

Example 1

Factor:

a) $6a^4 + 7a^2 - 10$

P -60
S 7
F $-\frac{5}{1}, \frac{12}{6}$

$$(a^2 + 2)(6a^2 - 5)$$

b) $\frac{1}{4}x^2 - x - 3$

$$\frac{1}{4}(x^2 - 4x - 12)$$

$$\frac{1}{4}(x - 6)(x + 2)$$

c) $(x^2 - \frac{17}{3}x - 2) \times 3$

$$\frac{1}{3}(3x^2 - 17x - 6)$$

P -18
S -17
F $-\frac{18}{3}, \frac{1}{1}$

$$\frac{1}{3}(3x+1)(x-6)$$

d) $(2x^{-2}x^4 - 7x^{-3}x^4 + 3x^{-4})x^4$

$$x^{-4}(2x^2 - 7x + 3)$$

$$x^{-4}(2x-1)(x-3)$$

P 6
S -7
F $\frac{6}{2}, \frac{-1}{1}$

x^{-4}
 $\frac{1}{x^4}$

e) $x^{2n} + 7x^n + 12$

$$(x^n + 3)(x^n + 4)$$

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#9b, d, f, h
Try 14c, e, f

Ans

9b) $\frac{1}{9}(3x-1)(3x-2)$
d) $\frac{1}{4}x(x-8)(x+4)$
f) $(x^{3n}-1)(x^{3n}-2)$
h) $(y^n-2y^m)(y^n-5y^m)$

Example 2: Using Patterns to Factor

Factor each polynomial expression:

a) $(x + 3)^2 - 6(x + 3) - 16$

$$z^2 - 6z - 16$$

$$(z - 8)(z + 2)$$

$$(x + 3 - 8)(x + 3 + 2)$$

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

Let $z = (x + 3)$

sub $z = x + 3$ back in

Let
 $w = x - 6$

b) $2(x - 6)^2 + 10(x - 6) - 48$

$$2w^2 + 10w - 48$$

$$2(w^2 + 5w - 24)$$

$$2(w + 8)(w - 3)$$

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

$$2(x + 2)(x - 9)$$

c) $3(2x + 5)^2 + 10(2x + 5) - 8$

Let
 $l = 2x + 5$

$$3l^2 + 10l - 8$$

$$(l + 4)(3l - 2)$$

$$(2x + 5 + 4)(3(2x + 5) - 2)$$

$$(2x + 9)(6x + 15 - 2)$$

$$(2x + 9)(6x + 13)$$

$$x^2 - 4 \\ (x + 2)(x - 2)$$

Example 3: Factor, using patterns

a) $(3x + 4)^2 - (2y - 1)^2$

$$(3x + 4 + 2y - 1)(3x + 4 - (2y - 1))$$

$$(3x + 2y + 3)(3x + 4 - 2y + 1)$$

$$(3x + 2y + 3)(3x - 2y + 5)$$

* brackets after a minus sign $\sqrt{4^2}$

b) $27(2x - 3)^2 - 75(y - 4)^2$

$$3 [9(2x - 3)^2 - 25(y - 4)^2]$$

$$3 [(3(2x - 3) + 5(y - 4))(3(2x - 3) - 5(y - 4))]$$

$$3 [(6x - 9 + 5y - 20)(6x - 9 - 5y + 20)]$$

$$3 [(6x + 5y - 29)(6x - 5y + 11)]$$

$$c) 32(x+2)^2 - 18(2y-3)^2$$

$$2[16(x+2)^2 - 9(2y-3)^2]$$

$$2[(4(x+2) + 3(2y-3))(4(x+2) - 3(2y-3))]$$

$$2[(4x+8+6y-9)(4x+8-6y+9)]$$

$$2[(4x+6y-1)(4x-6y+17)]$$

$$d) (4x^2 + 4xy + y^2) - 9z^2$$

perfect square trinomial
PSF

$$(2x+y)(2x+y) - 9z^2$$

$$(2x+y)^2 - 9z^2$$

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

Assign 174
PS #4 b, c
8a, d, e
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#12a, f, 13a,
14a