Feb. 21, 2018

Sect. 5-4

Trinomial Factoring

$x^2 + bx + c$

$ax^2 + bx + c$

e.g. $x^2 + 5x + 6$

$(\quad)(\quad)$

$$\frac{x^2+5x+6}{x^2-8x+12}$$

$$\frac{(x+2)(x+3)}{(x-2)(x-6)}$$

| 6 | |
|---|---|
| 1 | 6 |
| 2 | 3 |
| −1 | −6 |
| −2 | −3 |

| 12 | |
|---|---|
| 1 | 12 |
| −1 | −12 |
| 2 | 6 |
| −2 | −6 |
| 3 | 4 |
| −3 | −4 |

$$x^2 - 8x - 20$$

$$(x+2)(x-10)$$

| $-20$ | |
|---|---|
| $1$ | $-20$ |
| $-1$ | $20$ |
| $2$ | $-10$ |
| $-2$ | $10$ |
| $4$ | $-5$ |
| $-4$ | $5$ |

$$x^2 - 2x - 15$$

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

| $-15$ | |
|---|---|
| $1$ | $-15$ |
| $-1$ | $15$ |
| $3$ | $-5$ |
| $-3$ | $5$ |

$$x^2 + 5xy - 24y^2$$

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

| $-24$ | |
|---|---|
| $1$ | $-24$ |
| $-1$ | $24$ |
| $2$ | $-12$ |
| $-2$ | $12$ |
| $3$ | $-8$ |
| $-3$ | $8$ |
| $4$ | $-6$ |
| $-4$ | $6$ |

#1-40 A

Factor by Grouping

$$6x^3 - 9x^2 + 4x - 6$$

$$(6x^3 - 9x^2) + (4x - 6)$$

$2 \cdot 3 \cdot x \cdot x \cdot x$

$3 \cdot x \cdot x$

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

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

$$x^3 + x^2 + x + 1$$

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

$$x^2(x+1) + 1(x+1)$$

$$(x+1)(x^2+1)$$

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

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

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

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

$3x^2 + 5x + 2$

$3x^2 + 2x + 3x + 2$

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

$3x(x+1) + 2(x+1)$

$(x+1)(3x+2)$

$3 \cdot 2 = 6$

| | |
|---|---|
| 1 | 6 |
| −1 | −6 |
| 2 | 3 |
| −2 | −3 |

$2x^2 - 7x - 4$

$2 \cdot -4 = -8$

| | |
|---|---|
| 1 | −8 |
| −1 | 8 |
| 2 | −4 |
| −2 | 4 |

$2x^2 + 1x - 8x - 4$

$(2x^2 + 1x) - (8x + 4)$

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

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

$2x^2 - 7x - 4$

$x^2 - 7x - 8$

$(x+1)(x-8)$

| | $-8$ |
|---|---|
| $1$ | $-8$ |
| $-1$ | $8$ |
| $2$ | $-4$ |
| $-2$ | $4$ |

Now "undo" the 2

$\left(x+\frac{1}{2}\right)\left(x-\frac{8}{2}\right)$

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

$2x^2+5x-12$

$x^2+5x-24$

| $-24$ | |
|---|---|
| $3$ | $-8$ |
| $-3$ | $8$ |

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

$\left(x-\frac{3}{2}\right)\left(x+\frac{8}{2}\right)$

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

$12x^2+28x-24$

$-244$ ??

$4[3x^2-7x-6]$

$4[x^2-7x-18]$

$-18$

$2 \mid -9$

$-2 \mid 9$

$4(x-9)(x+2)$

$4\left(x-\frac{9}{3}\right)\left(x+\frac{2}{3}\right)$

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