

## Factoring Review

## Hw Section 11.2(ODDS)

Factor

$$\begin{aligned}
 1. \quad & \underline{12x^3 - 9x^2} + \underline{4x - 3} \\
 & = 3x^2(4x-3) + 1(4x-3) \\
 & = (4x-3)(3x^2+1)
 \end{aligned}$$

Grouping

$$2. \quad 4x^3 + 10x^2 + 12x + 30$$

$$\begin{aligned}
 3. \quad & \underline{3x^3 - 4x^2} + \underline{9x - 12} \\
 & = x^2(3x-4) + 3(3x-4) \\
 & = (3x-4)(x^2+3)
 \end{aligned}$$

Grouping

$$4. \quad 40xy + 30x - 100y - 75$$

$$\begin{aligned}
 5. \quad & \underline{x^3 - x^2} + \underline{2x - 2} \\
 & = x^2(x-1) + 2(x-1) \\
 & = (x-1)(x^2+2)
 \end{aligned}$$

Grouping

$$6. \quad x^2 - 25$$

$$\begin{aligned}
 7. \quad & 2x^2 - 200 \\
 & = 2(x^2 - 100) \\
 & = 2(x-10)(x+10)
 \end{aligned}$$

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$$8. \quad 3x^2 - 27$$

9.  $-36 + x^4$

$$= x^4 - 36$$

$$= (x^2 - 6)(x^2 + 6) \quad \square - \square$$

10.  $x^4 - 49$

$$= (x^2 - 7)(x^2 + 7) \quad \square - \square$$

11.  $17(x+1) + 12x(x+1)$

$$= (x+1)(17 + 12x)$$

Grouping

12.  $x^2(x+2) - 4(x+2)$

13.  $x^6(x-7) - 25(x-7)$

$$= (x-7)(x^6 - 25)$$

Grouping

$$= (x-7)(x^3 - 5)(x^3 + 5) \quad \square - \square$$

14.  $12x^2(3x+7) + 4x(3x+7)$

15.  $x^3(x+3) + 12(x+1)$

Prime (Doesn't factor)

16.  $3p^2 - 2p - 5$

17.  $2x^2 + 3x - 9$

*SPLIT Middle Term*

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

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

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

18.  $16x^2 - 40x + 25$

19.  $4x^2 - 4x + 1$

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

*Perfect<sup>2</sup> Tri*

20.  $2x^2 + 11x + 5$

21.  $2x^2 + 5x + 2$

$$= 2x^2 + 4x + x + 2$$

$$= 2x(x+2) + 1(x+2)$$

$$= (x+2)(2x+1)$$

*SPLIT Middle Term*

22.  $7x^2 + 53x + 28$

23.  $3 + 6x + 3x^2$

$$= 3x^2 + 6x + 3$$

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

$$= 3(x+1)(x+1)$$

24.  $100x^2 + 180x + 81$

25.  $10x^2 + 100x + 250$

$$= 10(x^2 + 10x + 25)$$

$$= 10(x + 5)^2$$

Perfect<sup>2</sup> Tri

26.  $4x^2 - 15x - 25$

27.  $4x^2 - 35x + 49$

$$= \underbrace{4x^2 - 7x}_{\text{}} - \underbrace{28x + 49}_{\text{}}$$

$$= x(4x - 7) - 7(4x - 7)$$

$$= (4x - 7)(x - 7)$$

SPCIT Middle Term

$M = 4x^2(49) = 196x^2$   
 $A = -35x$   
 $N = -7x, -28x$

28.  $4x^2 - 17x + 4$

29.  $6x^2 + 7x - 49$

$$= 6x^2 - 14x + 21x - 49$$

$$= 2x(3x - 7) + 7(3x - 7)$$

$$= (3x - 7)(2x + 7)$$

SPCIT Middle Term

$M = 6x^2(-49) = -294x^2$   
 $A = 7x$   
 $N = -14x, 21x$

30.  $6x^2 + 37x + 6$