

9-6-19 1<sup>st</sup> Trig

$$(2n^2+1)(3n+5)$$

$$\underline{6n^3 + 10n^2 + 3n + 5}$$

4 pieces  
↓  
terms

Factor by grouping (4 terms)

$$\begin{aligned} \textcircled{1} & (5x^3 + 15x^2) + (4x + 12) \\ & 5x^2(x + 3) + 4(x + 3) \\ & (x + 3)(5x^2 + 4) \end{aligned}$$

Factor out for

$$\begin{aligned} & 8x^4 + 12x^2 \\ & \textcircled{2}\textcircled{2}\textcircled{2} \cdot \textcircled{x}\textcircled{x}\textcircled{x}\textcircled{x} + \textcircled{2}\textcircled{2}\textcircled{3} \cdot \textcircled{x}\textcircled{x} \\ & 4x^2(2x^2 + 3) \end{aligned}$$

$$\begin{aligned} \textcircled{2} & (6x^3 + 2x) + (21x^2 + 7) \\ & 2x \underline{(3x^2 + 1)} + 7 \underline{(3x^2 + 1)} \\ & (3x^2 + 1)(2x + 7) \end{aligned}$$

$$\textcircled{3} (10x^3 - 5x^2) + (8x - 4)$$

$$5x^2(2x - 1) + 4(2x - 1)$$

$$(2x - 1)(5x^2 + 4)$$

$$\textcircled{4} (x^3 - 2x^2) + (5x - 10)$$

$$x^2(x - 2) + -5(x + 2)$$

Doesn't factor

$$\textcircled{5} (3x^3 + 12x) + (2x^2 - 8)$$

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

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

9-6-19 3<sup>rd</sup> Trig

$$(2n^2 + 3)(5n + 1)$$

$$10n^3 + 2n^2 + 15n + 3$$

4 pieces  $\rightarrow$  4 terms

Factor by grouping

$$\textcircled{1} (5x^3 + 15x^2) + (4x + 12)$$

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

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

$$\textcircled{2} \text{ Factor } 8x^4 + 12x^2$$

$$\textcircled{2}\textcircled{2}\textcircled{2} \cdot \textcircled{x}\textcircled{x}\textcircled{x}\textcircled{x} + \textcircled{2}\textcircled{2}\textcircled{3} \cdot \textcircled{x}\textcircled{x}$$

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

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

$$\textcircled{3} (6x^3 + 2x) + (21x^2 + 7)$$

$$2x(3x^2 + 1) + 7(3x^2 + 1)$$

$$(3x^2 + 1)(2x + 7)$$

$$\textcircled{4} (10k^3 - 5k^2) + (8k - 4)$$

$$5k^2(2k - 1) + 4(2k - 1)$$

$$(2k - 1)(5k^2 + 4)$$

$$\textcircled{5} (x^3 - 2x^2) + (-5x + 10)$$

$$x^2(x - 2) + -5(x - 2)$$

$$(x - 2)(x^2 - 5)$$

$$\textcircled{6} (3x^3 + 12x) + (2x^2 - 8)$$

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

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

$$\textcircled{7} \quad (3xy + 21x) + (-2y - 14)$$

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

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

9-6-19 4<sup>th</sup> Trig

$$(2n^2 + 5)(n + 4)$$

$$2n^3 + 8n^2 + 5n + 20$$

4 pieces  $\rightarrow$  4 terms

Factor by grouping

$$\textcircled{1} (5x^3 + 15x^2) + (4x + 12)$$

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

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

$$\textcircled{2} \text{ Factor } 8x^5 + 12x^2$$

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

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

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

$$\textcircled{3} \quad (6x^3 + 2x) + (21x^2 + 7)$$

$$2x(3x^2 + 1) + 7(3x^2 + 1)$$

$$(3x^2 + 1)(2x + 7)$$

$$\textcircled{4} \quad (9x^3 - 3x^2) + (3x - 1)$$

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

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

$$\textcircled{5} \quad (x^3 - 2x^2) + (5x + 10)$$

$$x^2(x - 2) + -5(x - 2)$$

$$(x - 2)(x^2 - 5)$$

$$\textcircled{6} (3x^3 + 12x) + (-2x^2 - 8)$$

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

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

$$\textcircled{7} (3xy + 21x) + (-2y - 14)$$

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

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