

9-6-17 1st Trig

① Factor $2x^2 + 9x + 10$

$$\begin{array}{l} \frac{2}{1, 2} \\ \frac{10}{1, 10} \\ \frac{2}{2, 5} \end{array} \begin{array}{l} 12x(x+1)(2x+10) \\ 21x(x+10)(2x+1) \\ 9x(x+2)(2x+3) \checkmark \\ 12x(x+5)(2x+2) \end{array}$$

② Factor $15x^2 + 13x + 2$

$$\begin{array}{l} \frac{15}{1, 15} \\ \frac{2}{3, 5} \end{array} \begin{array}{l} 17x(x+1)(15x+2) \\ 31x(x+2)(15x+1) \\ 11x(3x+1)(5x+2) \\ 13x(3x+2)(5x+1) \checkmark \end{array} \begin{array}{l} \frac{2}{1, 2} \end{array}$$

③ Factor $5x^2 + 37x + 14$

$$\begin{array}{l} \frac{5}{1, 5} \end{array} \begin{array}{l} 14x(x+1)(5x+14) \\ 71x(x+14)(5x+1) \\ 17x(x+2)(5x+7) \\ 37x(x+7)(5x+2) \checkmark \end{array} \begin{array}{l} \frac{14}{1, 14} \\ \frac{2}{2, 7} \end{array}$$

④ Factor $\underline{7}x^2 + 43x + \underline{6}$

$\underline{7}$	$13x(x+1)(7x+6)$	$\frac{6}{1,6}$
$1,7$	$43x(x+6)(7x+1) \checkmark$	$\frac{6}{2,3}$
	$17x(x+2)(7x+3)$	
	$23x(x+3)(7x+2)$	

⑤ Factor $\underline{10}x^2 + \underline{19}x + \underline{6}$

$\underline{10}$	$16x(x+1)(10x+6)$	$\frac{6}{1,6}$
$1,10$	$61x(x+6)(10x+1)$	$\frac{6}{2,3}$
$2,5$	$23x(x+2)(10x+3)$	
	$32x(x+3)(10x+2)$	
	$17x(2x+1)(5x+6)$	
	$32x(2x+6)(5x+1)$	
	$16x(2x+2)(5x+3)$	
	$19x(2x+3)(5x+2) \checkmark$	

⑥ Factor $2x^2 + 14x + 20$
Always factor out the GCF.

$$2(x^2 + 7x + 10)$$

$$\begin{array}{ccc} \downarrow & & \downarrow \\ 2(x+2)(x+5) & & \frac{10}{1, 10} \\ & & 2, 5 \end{array}$$

⑦ Factor $3x^2 + 12x + 9$

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

$$\begin{array}{ccc} \downarrow & & \\ 3(x+1)(x+3) & & \frac{3}{1, 3} \end{array}$$

⑧ Factor $3x^2 + 11x + 8$

$$\begin{array}{l} \frac{3}{1, 3} \\ 11x(x+1)(3x+8) \checkmark \\ 25x(x+8)(3x+1) \\ 10x(x+2)(3x+4) \\ 14x(x+4)(3x+2) \end{array} \quad \begin{array}{l} \frac{8}{1, 8} \\ 2, 4 \end{array}$$

⑨ Factor $2x^2 + x - 10$

$$\begin{array}{l} \frac{2}{1, 2} \\ 10 \times 2x(x+1)(2x-10) \\ 20x \times 1x(x+10)(2x-1) \\ -4x+5x(x-2)(2x+5) \\ 10x \times 2x(x+5)(2x-2) \end{array} \quad \begin{array}{l} \frac{10}{1, 10} \\ 2, 5 \end{array}$$

9-6-17 3rd Trig

① Factor 7 $x^2 + 13x + 6$

$$\begin{array}{l} \frac{7}{1,7} \quad 13x(x+1)(7x+6) \checkmark \\ \quad \quad 43x(x+6)(7x+1) \\ \quad \quad 17x(x+2)(7x+3) \\ \quad \quad 23x(x+3)(7x+2) \end{array} \quad \begin{array}{l} \frac{6}{1,6} \\ 2,3 \end{array}$$

② Factor 2 $x^2 + 9x + 10$

$$\begin{array}{l} \frac{2}{1,2} \quad 12x(x+1)(2x+10) \\ \quad \quad 21x(x+10)(2x+1) \\ \quad \quad 9x(x+2)(2x+5) \checkmark \\ \quad \quad (x+5)(2x+2) \end{array} \quad \begin{array}{l} \frac{10}{1,10} \\ 2,5 \end{array}$$

③ Factor 6 $x^2 + 17x + 7$

$$\begin{array}{l} \frac{6}{1,6} \quad 13x(x+1)(6x+7) \\ \quad \quad 2,3 \quad 43x(x+7)(6x+1) \\ \quad \quad 17x(2x+1)(3x+7) \checkmark \\ \quad \quad (2x+7)(3x+1) \end{array} \quad \frac{7}{1,7}$$

④ Factor $\underline{10}x^2 + 19x + \underline{6}$

$\frac{10}{1, 10}$ $2, 5$	$16x(x+1)(10x+6)$ $61x(x+6)(10x+1)$ $23x(x+2)(10x+3)$ $32x(x+3)(10x+2)$ $17x(2x+1)(5x+6)$ $32x(2x+6)(5x+1)$ $16x(2x+2)(5x+3)$ $19x(2x+3)(5x+2) \checkmark$	$\frac{6}{1, 6}$ $2, 3$
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⑤ Factor $2x^2 + 16x + 24$
 Factor out a 2.

$$2(x^2 + 8x + 12)$$

$$\begin{array}{ccc} \downarrow & & \downarrow \\ 2(x+2)(x+6) \end{array}$$

$$\frac{12}{1, 12}$$

$$\frac{2, 6}{3, 4}$$

⑥ Factor $\underline{3}x^2 + 5x + 2$

$\frac{3}{1, 3}$	$5x(x+1)(3x+2) \checkmark$ $7x(x+2)(3x+1)$	$\frac{2}{1, 2}$
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⑦ Factor $5x^2 + 27x + 10$

$$\frac{5}{1, 5}$$

$$15x(x + 1)(5x + 10)$$

$$51x(x + 10)(5x + 1)$$

$$15x(x + 2)(5x + 5)$$

$$27x(x + 5)(5x + 2) \checkmark$$

$$\frac{10}{1, 10}$$

$$2, 5$$

⑧ Factor $6x^2 + 19x - 7$

$$\frac{6}{1, 6}$$

$$6x - 7(x - 1)(6x - 7)$$

$$42x - 1(x - 7)(6x - 1)$$

$$14x - 3x(2x - 1)(3x - 7)$$

$$-2x + 21x(2x + 7)(3x - 1)$$

$$\frac{7}{1, 7}$$

9-6-17 4th Trig

① Factor 7 x^2 + 13 x + 6

$$\begin{array}{l} \frac{7}{1,7} \quad 13x(x+1)(7x+6) \checkmark \\ \quad \quad 43x(x+6)(7x+1) \\ \quad \quad 17x(x+2)(7x+3) \\ \quad \quad 23x(x+3)(7x+2) \end{array} \quad \begin{array}{l} \frac{6}{1,6} \\ 2,3 \end{array}$$

② Factor 2 x^2 + 9 x + 10

$$\begin{array}{l} \frac{2}{1,2} \quad 12x(x+1)(2x+10) \\ \quad \quad 21x(x+10)(2x+1) \\ \quad \quad 9x(x+2)(2x+5) \checkmark \\ \quad \quad (x+5)(2x+2) \end{array} \quad \begin{array}{l} \frac{10}{1,10} \\ 2,5 \end{array}$$

③ Factor 3 x^2 + 25 x + 8

$$\begin{array}{l} \frac{3}{1,3} \quad 11x(x+1)(3x+8) \\ \quad \quad 25x(x+8)(3x+1) \checkmark \\ \quad \quad 10x(x+2)(3x+4) \\ \quad \quad 14x(x+4)(3x+2) \end{array} \quad \begin{array}{l} \frac{8}{1,8} \\ 2,4 \end{array}$$

④ Factor $\underline{5}x^2 + 51x + \underline{10}$

$\frac{5}{1, 5}$	$15x(x+1)(5x+10)$	$\frac{10}{1, 10}$
	$51x(x+10)(5x+1) \checkmark$	$2, 5$
	$(x+2)(5x+5)$	
	$(x+5)(5x+2)$	

⑤ Factor $10x + \underline{19}x + 7$

$\frac{10x}{1, 10}$	$17x(x+1)(10x+7)$	$\frac{7}{1, 7}$
$2, 5$	$71x(x+7)(10x+1)$	
	$14x(2x+1)(5x+7) \checkmark$	
	$(2x+7)(5x+1)$	

⑥ Factor $2x^2 + 14x + 24$

Always factor out the GCF.

$2(x^2 + 7x + 12)$	
\downarrow \downarrow $2(x+3)(x+4)$	$\frac{12}{1, 12}$ $2, 6$ $3, 4$

⑦ Factor $3x^2 - 5x - 8$

$$\begin{array}{l} \frac{3x}{1,3} \quad -8x \quad +3x \quad (x+1)(3x-8) \quad \frac{8}{1,8} \\ 24x \quad 1x \quad (x-8)(3x+1) \quad 2,4 \\ 6x \quad 4x \quad (x+2)(3x+4) \\ 2x \quad 12x \quad (x+4)(3x-2) \end{array}$$

⑧ Factor $2x^2 + x - 10$

$$\begin{array}{l} \frac{2}{1,2} \quad 10x \quad 2x \quad (x+1)(2x-10) \quad \frac{10}{1,10} \\ 20x \quad 1x \quad (x+10)(2x-1) \quad 2,5 \\ -4x \quad +5x \quad (x-2)(2x+5) \\ (x+5)(2x-2) \end{array}$$

⑨ Factor $3x^2 + 21x + 30$

$$\begin{array}{l} 3(x^2 + 7x + 10) \quad \frac{10}{1,10} \\ 3(x+2)(x+5) \quad 2,5 \end{array}$$