#1 12/1/15

$2x^2 - 2$ * has GCF of 2

$2(x^2-1) \rightarrow$ **$2(x+1)(x-1)$**

$2(x^2-1)$

↓ GCF ↓ DOTS

$2(x^2-1) \rightarrow AC = -1x^2 \quad Bx = 0x$

$-1x^2$

$-1x + 1x$

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

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

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

$2x^2 - 2 \rightarrow AC = -4x^2 \quad Bx = 0x$

$-4x^2$

$-2x + 2x$

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

$2x(x+1) - 2(x+1) \rightarrow (x+1)(2x-2)$

$\rightarrow$ **$(x+1)(x-1)(2)$**

#2 12/1/15 $3x^2 - 1x - 2$ no GCF

AC

(3)(-2)

$-6x^2$ → subtract factors to get

Bx

$-1x$

use $-3x, 2x$

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

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

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

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

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

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

#3 12/1/15 $5x^2-3x-2$ no GCF

AC

$(5)(-2)$

$-10x^2$ → subtract to get

Bx

$-3x$

Use $-5x, +2x$

$5x^2-5x+2x-2$

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

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

$5x^2+2x-5x-2$

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

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

#4 12/1/15 $6x^2-4x-2$ has GCF of 2

$2(3x^2-2x-1)$ → AC $-3x^2$, Bx $-2x$ → use $-3x, +1x$

↓ GCF

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

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

$\boxed{2(x-1)(3x+1)}$

$6x^2-4x-2$

AC use $-6x+2x$

$-12x^2$

Bx

$-4x$

$6x^2-6x+2x-2$

$6x(x-1)+2(x-1)$

$(x-1)(6x+2)$

$(x-1)(3x+1)(2) = \boxed{2(3x+1)(x-1)}$

$6x^2+2x-6x-2$

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

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

$(3x+1)(x-1)(2) = \boxed{2(x-1)(3x+1)}$

#5 12/1/15 $4x^2-2x-2$ has GCF of 2

$2(2x^2-1x-1) \longrightarrow \underset{-2x^2}{AC} \quad \underset{-1x}{Bx}$ use $-2x, +1x$

GCF ↓

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

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

$\boxed{2(x-1)(2x+1)}$

$4x^2-2x-2 \longrightarrow \underset{-8x^2}{AC} \quad \underset{-2x}{Bx}$ use $-4x, +2x$

$4x^2-4x+2x-2$

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

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

$= \boxed{2(x-1)(2x+1)}$

$2x, -4x$

$4x^2+2x-4x-2$

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

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

$= \boxed{2(2x+1)(x-1)}$

(#6) $7x^2-5x-2$ no GCF $AC=-14x^2$ $Bx=-5x$

Use $-7x$, $+2x$

$7x^2-7x+2x-2$

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

$\boxed{(x-1)(7x+2)}$

$7x^2+2x-7x-2$

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

$\boxed{(7x+2)(x-1)}$

#7 12/11/15 $2x^2+4x+2$ has GCF of 2

$$2(x^2+2x+1) = \boxed{2(x+1)(x+1)}$$

2 → GCF; (x^2+2x+1) → P.S.T.

$2(x^2+2x+1) \rightarrow AC = 1x^2 \quad Bx = 2x \quad$ use $+1x, +1x$

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

$= \boxed{2(x+1)(x+1)}$

$2(x+1)(x+1) = \boxed{2(x+1)^2}$

$2x^2+4x+2 \rightarrow AC = 4x^2 \quad Bx = 4x \quad$ use $2x, 2x$

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

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

$= (x+1)(2x+2) = (x+1)(x+1)(2) = \boxed{2(x+1)(x+1)}$

(8) 12/11/15 $3x^2+5x+2$ no GCF

$AC = 6x^2$

$Bx = 5x$

use $+3x, +2x$

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

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

$\boxed{(x+1)(3x+2)}$

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

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

$\boxed{(3x+2)(x+1)}$

(9) $5x^2+7x+2$ has no GCF

AC
10x

BX
7x

Use 2x, 5x

$5x^2+5x+2x+2$

$5x(x+1)+2(x+1)$

$\boxed{(x+1)(5x+2)}$

$5x^2+2x+5x+2$

$x(5x+2)+1(5x+2)$

$\boxed{(5x+2)(x+1)}$

(10) 12/11/15 $6x^2+8x+2$ has GCF 2

$2(3x^2+4x+1)$ → $\frac{AC}{3x^2}$ $\frac{BX}{4x}$ use $3x, 1x$

↓

GCF

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

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

$\boxed{2(x+1)(3x+1)}$

$2(3x^2+4x+1) = 2(3x^2+1x+3x+1)$

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

$= \boxed{2((3x+1)(x+1)}$

$6x^2+8x+2$ $\frac{AC}{12x^2}$ $\frac{BX}{8x}$ use $6x, 2x$

$6x^2+6x+2x+2$

$= 6x(x+1)+2(x+1)$

$= (x+1)(6x+2)$

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

$= \boxed{2(x+1)(3x+1)}$

(11) $4x^2+6x+2 \rightarrow$ has GCF of 2

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

$\downarrow$

GCF

AC: $2x^2$

Bx: $3x$

use $2x, 1x$

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

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

$\boxed{2(x+1)(2x+1)}$

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

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

$$= \boxed{2(2x+1)(x+1)}$$

$4x^2+6x+2 \quad AC = 8x^2 \quad Bx = 6x$

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

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

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

$= \boxed{2(x+1)(2x+1)}$

use $4x, 2x$

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

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

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

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

$\boxed{2(x+1)(2x+1)}$

(12) 12 | 1 | 12 | 5 $7x^2+9x+2$ no GCF

AC
$14x^2$
BX
$+9x$

use $7x, 2x$

$7x^2+7x+2x+2$

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

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

$7x^2+2x+7x+2$

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

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

(13) 12/11/15 $2x^2-2x-4$ has GCF 2

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

↓

GCF

$AC=-2x^2$ $Bx=-1x$ use $-2x, 1x$

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

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

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

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

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

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

$2x^2-2x-4$

$AC\ -8x^2$ use $-4x, 2x$

$Bx\ -2x$

$2x^2+2x-4x-4$

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

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

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

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

$2x^2-4x+2x-4$

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

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

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

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

(14) · 12/1/15 $3x^2-4x-4$ no GCF

AC	BX
$-12x^2$	$-4x$

use $-6x, +2x$

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

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

$\boxed{(x-2)(3x+2)}$

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

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

$\boxed{(3x+2)(x-2)}$

(15) 12/1/15 $5x^2 - 8x - 4$ no GCF

AC $-20x^2$

Bx $-8x$

use $-10x, 2x$

$5x^2 - 10x + 2x - 4$

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

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

$5x^2 + 2x - 10x - 4$

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

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

(16) Hillis $6x^2-10x-4$ has GCF 2

$2(3x^2-5x-2) \longrightarrow AC=-6x^2$ use $-6x, +1x$

$Bx=-5x$

GCF

$2(3x^2-6x+1x-2)$

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

$\boxed{2(x-2)(3x+1)}$

$2(3x^2-5x-2) \longrightarrow 2(3x^2+1x-6x-2)$

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

$\boxed{2(3x+1)(x-2)}$

$6x^2-10x-4$

$AC=-24x$

$Bx=-10x$

use $-12x, 2x$

$6x^2-12x+2x-4$

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

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

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

$\boxed{2(x-2)(3x+1)}$

$6x^2+2x-12x-4$

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

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

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

$\boxed{2(3x+1)(x-2)}$

(17) 12/11/15 $4x^2-6x-4$ has GCF 2

$2(2x^2-3x-2)$ → GCF

$AC=-4x^2$ use $-4x, +1x$

$Bx=-3x$

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

$= \boxed{2(x-2)(2x+1)}$

$2(2x^2-3x-2) = 2(2x^2+1x-4x-2)$

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

$= \boxed{2(2x+1)(x-2)}$

$4x^2-6x-4$

$AC=-16x^2$

$Bx=-6x$

use $-8x, +2x$

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

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

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

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

$\boxed{2(x-2)(2x+1)}$

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

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

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

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

$\boxed{2(x-2)(2x+1)}$

(18) $7x^2-12x-4$ has no GCF

AC $-28x^2$

BX $-12x$

Use $-14x, +2x$

$7x^2-14x+2x-4$

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

$\boxed{(x-2)(7x+2)}$

$7x^2+2x-14x-4$

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

$\boxed{(7x+2)(x-2)}$

(19) 12|6|15

$2(4x^2-7x-2)$

↓

GCF

$8x^2-14x-4$ has gcf of 2

$AC = -8x^2$ use $-8x, +1x$

$Bx = -7x$

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

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

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

$2(4x^2-7x-2) = 2(4x^2+1x-8x-2)$

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

$= \boxed{2(4x+1)(x-2)}$

$8x^2-14x-4$

$AC = -32x^2$

$Bx = -14x$

use $-16x, +2x$

$8x^2-16x+2x-4$

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

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

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

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

$8x^2+2x-16x-4$

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

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

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

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

(20) 12/1/15 $10x^2-18x-4$ has GCF (2)

$2(5x^2-9x-2) \rightarrow$ $AC = -10x^2$, $Bx = -9x$, use $-10x, +1x$

GCF

$2(5x^2-10x+1x-2) = 2(5x(x-2)+1(x-2))$

$= \boxed{2(x-2)(5x+1)}$

$2(5x^2-9x-2) \rightarrow 2(5x^2+1x-10x-2)$

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

$\boxed{2(5x+1)(x-2)}$

$10x^2-18x-4$

$AC = -40x^2$

$Bx = -18x$

use $-20x, +2x$

$10x^2-20x+2x-4$

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

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

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

$\boxed{2(x-2)(5x+1)}$

$10x^2+2x-20x-4$

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

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

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

$\boxed{2(5x+1)(x-2)}$