Factor by guess and check

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Leading Coefficient is Prime or has minimal Factors

Factor: $3x^2 + 5x + 2$

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

2 1

1 2

$(3x)(1) + 2(x) = 5x$

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

Factor: $3y^2 + 22y + 7$

$(3y + 1)(y + 7)$

+7 +1

+1 +7

$(3y)(1) + (y)(7) = 10y$

$(3y)(7) + (y)(1) = 22y$

Factor: $4b^2 + 5b + 1$

$(4b + 1)(b + 1)$

2b 2b

4b b

+1 +1

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

$(4b)(1) + b(1) = 5b$

Factor: $10y^4 + 55y^3 + 60y^2$

$5y^2(2y^2 + 11y + 12)$

$(2y + 3)(y + 4)$

6 2

2 6

3 4

4 3

$(2y)(2) + 6(y) = 10y$

$(2y)(6) + 2(y) = 14y$

$(2y)(4) + 3(y) = 11y$

Factor: $15x^3 - 85x^2 + 100x$

$5x(3x^2 - 17x + 20)$

$5x(3x - 5)(x - 4)$

$12x^2 + 17x + 36$

Split the Middle Term ax^2+bx+c Factor any GCF Find the product of ac. Find two numbers m and n Multiply to ac $m\cdot n=a\cdot c$ Add to b $m+n=b$ Split the middle term using m and n ax^2+bx+c $ax^2+mx+nx+c$ Factor by grouping	$8\cdot(-21) = -168$ $-21\cdot 8$ $-8\cdot 21$ $-24\cdot 7$ Factor: $8u^2-17u-21$ $(8u^2-24u)+(7u-21)$ $8u(u-3)+7(u-3)$ $(u-3)(8u+7)$ $(6)(-20) = -120$ $-20\cdot 6$ $-6\cdot 20$ $24\cdot -5$ Factor: $6x^2+19x-20$ $(6x^2+24x)(-5x-20)$ $6x(x+4)-5(x+4)$ $(6x-5)(x+4)$ Factor: $3t^2+8t+5$ 15 $5\cdot 3$ $(3t^2+5t)+(3t+5)$ $t(3t+5)+1(3t+5)$ $(3t+5)(t+1)$ $(3t^2+3t)+(5t+5)$ $3t(t+1)+5(t+1)$ $(3t+5)(t+1)$ Factor: $10y^2-55y+70$ 28 $-7\cdot -4$ $5(2y^2-11y+14)$ $(2y^2-7y)(-4y+14)$ $y(2y-7)-2(2y-7)$ $5(2y-7)(y-2)$ Factor: $16x^2-32x+12$ 12 $-6\cdot -2$ $4(4x^2-8x+3)$ $(4x^2-6x)(-2x+3)$ $2x(2x-3)-1(2x-3)$

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