(1) $3x^3 - 75x - 5x^2 + 125$

GCF

$3x(x^2 - 25) - 5(x^2 - 25)$ (Grouping)

$(x^2 - 25)(3x - 5)$ (DOTS)

$(x+5)(x-5)(3x-5)$

(2) $x^2 - 15xy + 54y^2$

$(x - 6y)(x - 9y)$

54

P	S	D
1.54	55	53
2.27	29	25
3.18	21	15
6.9	(15)	3

(3) $80x^2y^2 - 2xy - 1$

u^2 u

$80u^2 - 2u - 1$

$80u^2 - 10u + 8u - 1$

$10u(8u - 1) + 1(8u - 1)$

$(8u - 1)(10u + 1)$

$(8xy - 1)(10xy + 1)$

"u SUBSTITUTION"

(1.) LET THE VARIABLE PART OF MIDDLE BE u AND THE VARIABLE PART OF FIRST BE u^2

(2) FACTOR LIKE NORMAL

$ac = 80(1)$

$= 80$

P	S	D
1.80	81	79
2.40	42	38
4.20	24	16
5.16	21	11
8.10	18	(2)

(3) PLUG $u =$ ___ BACK IN AND SIMPLIFY

(4) $16x^2 + 68x + 42$

GCF $2(8x^2 + 34x + 21)$

KEY # $2(8x^2 + 28x + 6x + 21)$

$2[4x(2x+7) + 3(2x+7)]$

$2(2x+7)(4x+3)$

$ac = 8(21) = 168$

P	S	D
1.168	169	167
2.84	86	82
3.56	59	53
4.42	46	38
6.28	(34)	22
7.24	31	17
8.21	29	13
12.14	26	2

(5) $2x^5 - 162x$

GCF $2x(x^4 - 81)$

DOTS $2x(x^2 + 9)(x^2 - 9)$

DOTS $2x(x^2+9)(x+3)(x-3)$

(6) $14p^2 - 15q^2 + 29pq$

$14p^2 + 29pq - 15q^2$

KEY H $ac = 14(15) = 210$

P	S	D
1.210	211	209
2.105	107	103
3.70	73	67
5.42	47	37
6.35	41	(29)
7.30	37	23
9.21	31	11
14.15	29	1

$14p^2 + 29pq - 15q^2$

$14p^2 + 35pq - 6pq - 15q^2$

$7p(2p + 5q) - 3q(2p + 5q)$

$(2p + 5q)(7p - 3q)$