ZERO FACTOR PROPERTY

IF

$PQ = 0$

THEN

$P=0 \quad Q=0$

(1) $x^2 + 38x - 80 = 0$ (PSD)

80

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

$(x + 40)(x - 2) = 0$

$x+40=0 \quad x-2=0$

$x = -40 \quad x = 2$

(2) $45x^2 + 13x - 2 = 0$ (KEY #)

$ac = 45(2) = 90$

P	S	D
1.90	91	89
2.45	47	43
3.30	33	27
5.18	23	(13)
6.15	21	9
9.10	19	1

$45x^2 + 18x - 5x - 2 = 0$

$9x(5x+2) - 1(5x+2) = 0$

$(5x+2)(9x-1) = 0$

$5x+2=0 \quad 9x-1=0$

$5x=-2 \quad 9x=1$

$x = -\frac{2}{5} \quad x = \frac{1}{9}$

(3) $5x^2 = 7x$

$5x^2 - 7x = 0$ (GCF)

$x(5x-7) = 0$

$x=0 \quad 5x-7=0$

$5x=7$

$x = \frac{7}{5}$

(4) $(x+10)(x-5) = -14$

$x^2 - 5x + 10x - 50 + 14 = 0$

$x^2 + 5x - 36 = 0$ (PSD)

36

P	S	D
1.36	37	35
2.18	20	16
3.12	15	9
4.9	13	(5)
6.6	12	0

$(x - 4)(x + 9) = 0$

$x-4=0 \quad x+9=0$

$x = 4 \quad x = -9$

(5) $-25x + 75 = 3x^2 - x^3$

$x^3 - 3x^2 - 25x + 75 = 0$ (GROUPING)

$x^2(x-3) - 25(x-3) = 0$

$(x-3)(x^2-25) = 0$ (DOTS)

$(x-3)(x+5)(x-5) = 0$

$x-3=0 \quad x+5=0 \quad x-5=0$

$x = 3 \quad x = -5 \quad x = 5$