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Homework #1

Q1. In base 36, there are 36 digits 0, 1, 2, 3, 4…9, A, B, C, D… X, Y, Z. What is the equivalent number in radix 10 for $(ADD)_{36}$

$(ADD)_{36} = (?)_{10}$

$10 * 36^2 + 13 * 36^1 + 13 * 36^0 = 13,441$

$\boxed{(13,441)_{10}}$

Q2. What is the radix of the numbers if the solution to the quadratic equation $x^2-10x+26=0$ is x=4 and x=7?

$x^2 - 10x + 26 = 0 \quad x = 4,7$

$4^2 - 10 * 4 + 26 = 0$	Substitute 4 for x.
$26 = 2r + 6$	26 is equivalent to 2 of whatever base plus 6.
$10 = 1r + 0$	Also, 10 is equivalent to base^1
$4^2 - (r * 4) + (2r + 6) = 0$	Substitute the values.
$16 - 4r + 2r + 6 = 0$	Simplifiy.
$22 - 2r = 0$	
$22 = 2r$	
$\boxed{r = 11}$	Radix is 11.

Q3. Fill the multiplication table for base seven.

	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	11	13	15
3	0	3	6	12	15	21	24
4	0	4	11	15	22	26	33
5	0	5	13	21	26	34	42
6	0	6	15	24	33	42	51