Name _____ Quiz 2

1) Convert the decimal number 513 to base 5.

$513 \div 5 = 102\ \ R3$ (This remainder gives the one's place – what's left over after modding out by 5)
$102 \div 5 = 20\ R2$ (This remainder gives the five's place – what's left over after modding out by 25)
$20 \div 5 = 4\ R0$ (25's place)
$4 \div 5 = 0\ \ R4$ (125's place)

$513 = (4023)_5$

2) Show that $\sqrt{n^2 + 1}$ is $O(n)$.

$\sqrt{n^2 + 1} \leq \sqrt{n^2 + n^2} = \sqrt{2n^2} \leq \sqrt{4n^2} = 2n$

**Note that showing something is true requires mathematical reasoning. This is not the time to hand wave your ideas.

3) Multiply $(1234)_5 \cdot (3002)_5$.

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   1234
 x 3002
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   3023
4312000
4320023
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