

Quiz #1 – MATH 3250
Fall 2005

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Name : _____

Directions: Show me your best algebra and find a closed-form expression for the following sum...

1. Solve for S .

$$\begin{array}{r} S = 1 * 10^1 + 2 * 10^2 + 3 * 10^3 + \dots + n * 10^n \\ 10S = 1 * 10^2 + 2 * 10^3 + \dots + (n-1) * 10^n + (n * 10^{n+1}) \end{array}$$

Hint: $1 + r + r^2 + r^3 + \dots + r^{n-1} = \frac{r^n - 1}{r - 1}$.