We would like to add two large integers:

$$
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+ & \underline{\mathtt{x}_{\mathtt{n}-1}\mathtt{x}_{\mathtt{n}-2}\mathtt{x}_{\mathtt{n}-3}\cdots\mathtt{x}_{3}\mathtt{x}_{2}\mathtt{x}_{1}\mathtt{x}_{0}}
\end{array}
$$

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Example

$$\begin{array}{r} 85436 \\ +\underline{79042} \\ 164478 \end{array}$$

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Example

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How fast is this algorithm?

Linear (in the number of digits).

Can we do better?

No: Any algorithm must examine every digit.

From now on, assume that time to add two n digit numbers is exactly

$$A(n) = \alpha n \text{ (for some constant } \alpha).$$