Part 1. Complexity of solving a linear system

If solving a linear system of size $250 \times 250$ takes $x$ seconds, how many seconds does it take to solve one of size $500 \times 500$?

Write a piece of code that prints this factor. Here are some pieces you’ll need:

- The function `process_time()` returns the amount of CPU time spent in the current process. Taking differences of this can help you figure out the time spent on a task.
- `np.random.randn(250, 250)` returns a random $250 \times 250$ matrix
  `np.random.randn(250)` returns a random vector of length 250.
- `np.linalg.solve(A, b)` solves a linear system with matrix $A$ and right-hand side vector $b$.

```python
import numpy as np
from time import process_time
```

Part 2. Complexity of solving a linear system

Which of the following is roughly proportional to the time it takes to solve a linear system of size $n \times n$?

(A) $n$
(B) $n^2$
(C) $n^3$
(D) $n^4$
(E) $n \log n$