Chapter 5  Answers to some of questions

Short-Answer questions

1) a) using linked list implementation

push: $\Theta(n)$, although it can be improved to $\Theta(1)$, if we keep track of the last element
pop: $\Theta(n)$, although it can be improved if we keep track of the last element (but not to $\Theta(1)$)
top: $\Theta(n)$, although it can be improved to $\Theta(1)$, if we keep track of the last element
size: $\Theta(1)$, since we keep this information in attribute self.size

b) using Python's list implementation

push: $\Theta(1)$, on average append operation on lists takes $\Theta(1)$ time
pop: $\Theta(1)$
top: $\Theta(1)$
size: $\Theta(1)$, since $\text{len(self.items)}$ runs $\Theta(1)$