


## Question 2

### Question 2

1/1 point (graded)

```
(define (foo x)
  (local [(define (bar y) (+ x y))]
    (+ x (bar (* 2 x)))))

(list (foo 2) (foo 3))
```



```
(list
  (local [(define (bar y) (+ 2 y))]
    (+ 2 (bar (* 2 2)))))
(foo 3))
```

What is the result of the next step of the evaluation

Remember, when we evaluate a local expression, three things happen in one step.



```
(list (local [(define (bar_0 y) (+ 2 y))]
  (+ 2 (bar_0 (* 2 2)))))
(foo 3))
```



```
(define (bar_0 y) (+ 2 y))
(list (+ 2 (bar_0 (* 2 2)))
  (foo 3))
```



```
(define (bar_0 y) (+ 2 y))
(list (local []
  (+ 2 (bar_0 (* 2 2)))))
(foo 3))
```



#### Explanation

When we get to evaluate the local expression, three things happen in one step: (1) Renaming the local definition(s) and all its references to a new name (2) Lifting the definitions to the top level scope (3) Replacing the local expression with the body, in which renaming has happened

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 Answers are displayed within the problem