MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Department of Electrical Engineering and Computer Science
6.001 Structure and Interpretation of Computer Programs
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In Scheme, `let` is a special form that is used as a way to bind the values of *local* variables, i.e., variables that are accessible only within a procedure (or other defined block of code).

The general form of `let` is:
```
(let ((<var₁>   <exp₁>)          ; each var is bound to the value of the  corresponding expression
      (<var₂>   <exp₂>)
         . . .
      (<varₙ>   <expₙ>))
   <body>)
```

Example

(define a 3)

(define (foo x)
  (let ((a 0))
    (+ x a)))

(foo 10) => $(+\ 10\ 0)$ $\Rightarrow$ 10

`Let` desugars into an anonymous lambda.

(define (foo x)
   ((lambda (a) (+ x a)) 0)))

Variables are bound in parallel, not sequentially.

(define a 3)

(let ((a 0)
      (b a))
   (+ a b)) => $(+\ 0\ 3)$ $\Rightarrow$ 3

desugaring with more than one variable:

((lambda (a b) (+ a b)) 0 a)

To bind variables sequentially, use several `lets` or `let*`.

(define a 3)

(let ((a 0))
  (let ((b a))
    (+ a b)) => (+ 0 0) =7 0

(let* ((a 0)
     (b a))
  (+ a b)) => (+ 0 0) =7 0

Problems

For each expression or set of expressions, give the value returned by evaluating the last expression in the set.

<div align="center">value</div>

1. ((lambda (x)
     (let ((y 4))
       (+ x y)))
    7)

$\boxed{11}$

2. (define a 4)
  (define x 3)

  (define (foo x)
     (let ((a 1))
      (+ x a))))
  (foo 2)

$\boxed{3}$

3. (let ((foo (lambda (x) (* 2 x)))
     (y 4))
  (foo y)
)

$\boxed{8}$