CS 61A Week 9 Lab
Monday afternoon, Tuesday, or Wednesday morning

1. Exercise 3.12 of Abelson and Sussman.

2. Suppose that the following definitions have been provided.

```
(define x (cons 1 3))
(define y 2)
```

A CS 61A student, intending to change the value of `x` to a pair with `car` equal to 1 and `cdr` equal to 2, types the expression `(set! (cdr x) y)` instead of `(set-cdr! x y)` and gets an error. Explain why.

3a. Provide the arguments for the two `set-cdr!` operations in the blanks below to produce the indicated effect on `list1` and `list2`. Do not create any new pairs; just rearrange the pointers to the existing ones.

```
> (define list1 (list (list 'a) 'b))
list1
> (define list2 (list (list 'x) 'y))
list2
> (set-cdr! _____ _____ )
okay
> (set-cdr! _____ _____ )
okay
> list1
((a x b) b)
> list2
((x b) y)
```

3b. After filling in the blanks in the code above and producing the specified effect on `list1` and `list2`, draw a box-and-pointer diagram that explains the effect of evaluating the expression `(set-car! (cdr list1) (cadr list2))` .

4. Exercises 3.13 and 3.14 in Abelson and Sussman.