; ★★★ CSC104 Fall 2019 — Exercise #5 — Print out and fill in by hand, then hand in to the TA at the start of your quiz. ★ ★ ★

; UTorID (login id):

; Surname:

; Given Name:

; ★ Question 1. Show the following steps, but you may omit the underlining (and, as usual, the re-copying of the original expression) ...

(step ((fun n) (+ n 5)) 7))  (step (((fun h) (oval 10 h)) 7))  (step (((fun pie) "plum") 7))

(step (map ((fun n) (+ n 5)) (list 10 30 20)))

(step (map ((fun h) (oval 10 h)) (list 10 30 20)))

(step (map ((fun pie) "cherry") (list 10 30 20)))
Question 2. Assume the following three definitions have been entered/run ...

\[
\begin{align*}
&\text{(define (bump c ns)} \quad &\text{(define (0 h)} \quad &\text{(define (n-of n thing)} \\
&\quad (map ((fun n) (+ c n)) ns)} \quad &\quad \text{(map ((fun w) (oval w h)) list h \{2 h\} \{3 h\})} \quad &\quad \text{(map ((fun _\) thing) \{range n\})} \\
&\text{)}
\end{align*}
\]

; ... and for each of the following show the steps, but you may omit the underlining (and, as usual, the re-copying) ...

\[
\text{(step (bump 3 (list 12 43 65))}
\]

\[
\text{(step (0 10))}
\]

\[
\text{(step (n-of 3 "cat"))}
\]
; ★ Question 3. Assume the following two definition has been entered/run ...

(define (a k)
  (if (zero? k) ☐
    else (beside ☐ (taller (a (dec k))) ☐)))

; ... and for each of the following show the steps, INCLUDING the UNDERLINING, but you may omit, as usual, the re-copying ...

(step (a 0))

(step (hide (a 0))
  (a 1))

(step (hide (a 1))
  (a 2))
Question 4. Assume the following definition has been entered/run ...

(define (b n)
  (if (positive? n) (above (b (dec n))
                (wider (b (dec n))))
      else \(\triangle\))

; ... and for each of the following show the steps, INCLUDING the UNDERLINING, but you may omit, as usual, the re-copying ...

(step (b 0))

(step (hide (b 0))
  (b 1))

(step (hide (b 1))
  (b 2))