Questions 5-7

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Question 5

1/1 point (graded)

We want to write a function called `list-from-to` that takes in two numbers, the first greater than or equal to the sencond, and produces a list of each number from the first to the second.

For example, `(list-from-to 10 7)` should produce `(cons 10 (cons 9 (cons 8 (cons 7 empty))))`

The signature and purpose for this function are as follows

```
;; Natural Natural > ListOfNatural
;; given n and a, n >= a, produce the list (cons n (cons n-1 ... (cons a empty)))
```

What is the result of `(check-expect (list-from-to 5 5) _____)`?

- `empty`
- `0`
- `(cons 5 empty)` ✔
- this call to `list-from-to` breaks the assumption in the purpose

Explanation
Because `a` = `n`, there is only one number in this list.

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Question 6

1/1 point (graded)

Here is a partially completed function body for `list-from-to`

```
(define (list-from-to n a)
  (cond[(__________)(cons a empty)]
       [else ____________________]))
```

What should go in the first blank?

- `(zero? n)`
- `(zero? a)`
- `(zero? (- n a))` ✔

Explanation
As shown in the `check-expect` from the previous question, when n - a is zero, the function should produce `(cons a empty)`.

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Question 7

1/1 point (graded)

Our function body now looks like:

```
(define (list-from-to n a)
  (cond [(zero? (- n a)) (cons a empty)]
        [else ____________________]))
```

What should go in the remaining blank?

- `(cons n (list-from-to n a))`
- `(cons n (list-from-to (sub1 n) a))` ✔
- `(cons n (list-from-to n (sub1 a)))`
- `(cons n (list-from-to (sub1 n) (sub1 a)))`

Explanation

The function should produce `(cons n (cons n-1 (cons n-2 ... (cons a empty))))` so we need to subtract 1 from n until n equals a. The final function body is

```
(define (list-from-to n a)
  (cond [(zero? (- n a)) (cons a empty)]
        [else
         (cons n
               (list-from-to (sub1 n) a))]))
```

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