Exercise 3.58.

Give an interpretation of the stream computed by the following procedure:

```
(define (expand num den radix)
  (cons-stream
   (quotient (* num radix) den)
   (expand (remainder (* num radix) den) den radix)))
```

(`Quotient` is a primitive that returns the integer quotient of two integers.) What are the successive elements produced by `(expand 1 7 10)`? What is produced by `(expand 3 8 10)`?

Answer.

The stream produced by `expand` consists of digits in the quotient of `num` by `den` produced by long division in base `radix`. The first element is all the digits left to the second decimal place multiplied by the `radix`. The rest of the stream is made up of all the remaining digits. For example,

```
(stream-head (expand 1 7 10) 15)
;Value 13: (1 4 2 8 5 7 1 4 2 8 5 7 1 4 2)

(stream-head (expand 3 8 10) 15)
;Value 14: (3 7 5 0 0 0 0 0 0 0 0 0 0 0 0)
```

where `stream-head` is a procedure provided by MIT Scheme and, `(stream-head s k)` returns the first k elements of stream `s` as a list.

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