

**Pre-Lab Exercise 2.1** The approximation is accurate to 4 decimal places for  $k = 11$ .

```
(define (cont-frac-r n d k)
  (define (cf i)
    (if (> i k)
        0
        (/ (n i)
            (+ (d i)
                (cf (+ i 1))))))
  (cf 1))

(define (cont-frac-i n d k)
  (define (cf-iter k sum)
    (if (= k 0)
        sum
        (cf-iter (- k 1)
                  (/ (n k)
                     (+ (d k)
                         sum)))))
  (cf-iter k 0))
```

**Lab Exercise 2.2** The approximation is accurate to 2 decimal places for  $k$  approximately 120.

**Pre-Lab Exercise 2.3**

```
(define (atan-cf k x)
  (cont-frac (lambda (i)
               (if (= i 1)
                   x
                   (square (* (- i 1) x))))
             (lambda (i)
               (- (* 2 i) 1.0))
             k))
```

**Lab Exercise 2.4** Given (define pi (estimate-pi 10000)) where 10000 is arbitrarily chosen.

procedure	$k$	$x$	value
atan-cf	10	1	.785398135111635
atan-cf	30	1	.7853981633974483
atan-cf	100	1	.7853981633974483
atan		1	.7853981633974483
atan-cf	10	$\pi$	1.258297497839761
atan-cf	30	$\pi$	1.2626364386129623
atan-cf	100	$\pi$	1.2626364544599773
atan		$\pi$	1.262636454459977