hw06

November 24, 2021

```
[1]: ; Q1: Thane of Cadr
     ;Define the procedures cadr and caddr, which return the second and third␣
      ↪elements of a list, respectively:

     (define (cddr s)
       (cdr (cdr s)))

     (define (cadr s)
       'YOUR-CODE-HERE
       (car (cdr s))
     )

     (define (caddr s)
       'YOUR-CODE-HERE
       (car (cddr s))
     )
```

```
[2]: (cddr (list 1 2 3 4 5))
```

```
[2]: (3 4 5)
```

```
[3]: (cadr (list 1 2 3 4 5))
```

```
[3]: 2
```

```
[4]: (caddr (list 1 2 3 4 5))
```

```
[4]: 3
```

```
[5]: ;Q2: Sign
     ;Using a cond expression, define a procedure sign that takes in one parameter␣
      ↪num
     ;and returns -1 if num is negative, 0 if num is zero, and 1 if num is positive.

     (define (sign num)
       'YOUR-CODE-HERE
       (cond ((< num 0) -1)
             ((= num 0) 0)
             ((> num 0) 1))
     )
```

[6]:

```
(sign 10)
```

[6]: 1

[7]:

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;Q3: Pow
(define (square x) (* x x))

(define (pow x y)
  'YOUR-CODE-HERE
  (cond ((= y 0) 1)
        ((= y 1) x)
        ((= y 2) (square x))
        ((= (remainder y 2) 0) (square (pow x (/ y 2))))
        ((= (remainder y 2) 1)(* x (square (pow x (/ (- y 1) 2))))))
)
```

[8]:

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(pow 2 5)
```

[8]: 32

[ ]:

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