

## FUNCTIONAL PROGRAMMING 2017-2018 SPRING QUIZ 2

40 minutes

May 4, 2018

Id	Full Name	Signature	Q1	Q2	Q3	Total
			/ 30	/ 35	/ 35	/ 100

1. Consider the following expression. Note:  $\wedge$  is the exponentiation operator.

```
filter odd $ map (('mod' 10) . (^2)) [5..9]
```

- (a) What is the result of this expression? Explain.

- (b) Write a list comprehension that will produce the same result. *Hint:* You can use a nested comprehension.

2. Consider the following function definition:

```
foo1 :: Int -> (a -> a) -> a -> a
foo1 0 _ x = x
foo1 n f x = f $ foo1 (n - 1) f x
```

- (a) What is the result of the call “foo1 4 (\*2) 3”? Explain.

(b) What does this function do?

3. Consider the following function definition:

```
foo2 n f x = foldr (\y _ -> f y) x [1..n]
```

(a) What is the result of the call “foo2 4 (\*2) 3”? Explain.

(b) How would you modify the function definition to get the same result as in the foo1 function in Question 2? Explain.