

CSE 304 2. Midterm Exam (b)

I. QUESTION

Write a Scheme function **fahr** that converts the temperature from Celcius to Fahrenheit. Remember that,

$$T_f = 1.8 * T_c + 32 \quad (1)$$

Example:

```
(fahr 0) => 32
(fahr 100) => 212
(fahr -20) => -4
```

II. QUESTION

Write a Scheme function **max3** that returns the maximum of 3 integers.

Example:

```
(max3 3 5 7) => 7
(max3 35 7 2) => 35
(max3 7 26 1) => 26
```

III. QUESTION

Write a Scheme function **comb** which calculates the binomial $\binom{M}{N}$. Note that $\binom{M}{N} = \binom{M-1}{N} + \binom{M-1}{N-1}$, $\binom{N}{N} = \binom{N}{0} = 1$.

Example:

```
(comb 4 2) => 6
(comb 10 0) => 1
(comb 6 3) => 20
(comb 8 6) => 28
```

IV. QUESTION

Write a Scheme function **sorted** which, given a list of numbers, tests whether the numbers are sorted in ascending order or not.

Example:

```
(sorted '(1 2 3)) => #t
(sorted '(4 5 8 12 19)) => #t
(sorted '(5 4 8 12 19)) => #f
(sorted '(54 812 19)) => #f
```