

CMSC 330, Fall 2017 Quiz 4

Name (as it appears on Gradescope) \_\_\_\_\_

Discussion Time (circle one) 10am 11am 12pm 1pm 2pm 3pm

Discussion TA (circle one) Joseph Greg Justin Michael P. BT Daniel David Derek  
 Cameron Eric Kesha Shriraj Pei-Jo Michael S. Bryan Kameron

Instructions

- Do not start this quiz until you are told to do so.
- You have 15 minutes for this quiz.
- This is a closed book quiz. No notes or other aids are allowed.
- For partial credit, show all your work and clearly indicate your answers.

1. (4 points) Using the rules given below, show:  $(1 + 2) + 3 \Rightarrow 6$

$$\frac{}{n \Rightarrow n} \quad \frac{e_1 \Rightarrow n_1 \quad e_2 \Rightarrow n_2 \quad n_3 \text{ is } n_1 + n_2}{e_1 + e_2 \Rightarrow n_3}$$

2. (8 points) Using the rules given below, show: *let*  $x = 1$  *in* *let*  $x = 2$  *in*  $x + x \Rightarrow 4$

$$\frac{}{A; n \Rightarrow n} \quad \frac{A(x) = v}{A; x \Rightarrow v}$$

$$\frac{A; e_1 \Rightarrow v_1 \quad A, x : v_1; e_2 \Rightarrow v_2}{A; \text{let } x = e_1 \text{ in } e_2 \Rightarrow v_2} \quad \frac{A; e_1 \Rightarrow n_1 \quad A; e_2 \Rightarrow n_2 \quad n_3 \text{ is } n_1 + n_2}{A; e_1 + e_2 \Rightarrow n_3}$$

3. (8 points) Translate the following rules into English and describe the operation *myst* represents.

$$\text{Mystery(1): } \frac{A; e_1 \Rightarrow v_1 \quad A; e_2 \Rightarrow v_2 \quad v_1 = v_2}{A; \text{myst } e_1 e_2 \Rightarrow \text{true}} \quad \text{Mystery(2): } \frac{A; e_1 \Rightarrow v_1 \quad A; e_2 \Rightarrow v_2 \quad v_1 \neq v_2}{A; \text{myst } e_1 e_2 \Rightarrow \text{false}}$$