

**SOLUTION TO THE QUESTION FOR MATH 343 FOR  
THE LECTURE OF 19 APRIL**

**Problem 1.** Which of the following random variables is discrete, and which is continuous?

- (1) Roll 2021 standard fair dice, and record the total of the numbers shown.
- (2) Roll one standard fair die. Count how many times it is rolled before the first time a 4 appears.
- (3) Choose a currently active player in the National Football League and measure his mass, in kilograms.

*Solution.* (1) This random variable is discrete. The possible values are integers in the interval  $[2021, 6(2021)]$ , and there are only finitely many of them.

(2) This random variable is discrete. The possible values are nonnegative integers, which are separated from each other even though there are infinitely many of them.

(3) This random variable is continuous. The mass could in principle be anything in some interval, certainly anything in  $[90, 120]$ , but other values are also possible.

(This is a model. With a real scale, there are only finitely many values that can in practice be read.) □