

## Quiz 1 Solutions

(1) According to the syllabus,

— using a smartphone in class is academic misconduct.  True

— a finding of academic misconduct will result in an F.  True

(2) The polynomial  $P(x, y) = 10x^2y + 25y^2 - 15x - 12$   does not have an integer root because  the sum of the first three terms is a multiple of 5, so never 12.

(3) Consider the graph  $K_{10}$  that is a clique on 10 vertices: it has 10 vertices and edge between each pair of them. Does this graph have a **perfect matching**?  Yes

Consider the graph  $K_{11}$  that is a clique on 11 vertices: it has 11 vertices and edge between each pair of them. Does this graph have a **perfect matching**?  No

(4) What's an **alphabet**?  A finite nonempty set (Give a mathematically formal definition.)

(5) How many **pairs** of strings  $(x, y)$  are there such that  $xy = x \circ y = 1111$ ?  5