Don’t Cares

1. Observability Don’t Cares: 
Due to observability don’t cares, Gate U1 can be replaced with which type of gate (e.g. AND, OR, NAND, NOR, XNOR)? Justify your answer.

2. Satisfiability Don’t Cares: 
Due to satisfiability don’t cares, Gate U1 can be replaced with which type of gate (e.g. AND, OR, NAND, NOR, XNOR)? Justify your answer.

Universal Gates

1. Prove that the 3-input gate \( f(x, y, z) = (x + y)(\overline{x} + z)(\overline{x} + \overline{y} + \overline{z}) \) is universal.