

6.15 Using algebraic methods, reduce the number of gate inputs for the following function by creating a multi-level circuit: $F(a, b, c, d, e, f, g) = abcde + abcd'e'fg + abcd'e'f'g'$. Assume only AND, OR and NOT gates will be used. Draw the circuit for the original equation and for the multi-level circuit, and clearly list the delay and number of gate-inputs for each circuit.

$$F = abcde + abcd'e'fg + abcd'e'f'g'$$

$$F = abc(de + d'e'fg + d'e'f'g')$$

$$F = abc(de + d'e'(fg + f'g'))$$

