\[ 3A: \ x^\alpha, \ 2 \cdot 3^l, \ y^\beta, \ 2^k \cdot z^\gamma \]

\( x = 5, \ y = 7, \ z = 11: \) We may and do assume \( \beta \geq 2 \) and \( l \geq 2, \) so that \( 7^\beta = 2 \cdot 3^l + 1 \) implies that \( \beta \) is divisible by 3 via \((2 \cdot 3 + 1)^\beta = 2 \cdot 3^l + 1 \) and \( 9 \cdot M + 6 \cdot \beta = 2 \cdot 3^l. \) But then \( 2 \cdot 3^l = 7^\beta - 1 = 7^{3\beta'} - 1 = 343^{\beta'} - 1 = 342 \cdot (343^{\beta'-1} + \ldots + 1) \) would be divisible by \( 2 \cdot 3^2 \cdot 19, \) contradiction.

\( x = 5, \ y = 11, \ z = 7: \) \( 2 \cdot 3^l = 11^\beta - 1 = 10 \cdot (11^{\beta-1} + \ldots + 1) \) is divisible by 5, contradiction.

\( x = 7, \ y = 5, \ z = 11: \) \( 2 \cdot 3^l = 5^\beta - 1 = 4 \cdot (5^{\beta-1} + \ldots + 1) \) is divisible by \( 2^2, \) contradiction.

\( x = 7, \ y = 11, \ z = 5: \) \( 2 \cdot 3^l - 2 = 7^\alpha - 1 = 6 \cdot (7^{\alpha-1} + \ldots + 1) \) is divisible by 3, contradiction.

\( x = 11, \ y = 5, \ z = 7: \) \( 5^\beta - 3 = 11^\alpha - 1 = 10 \cdot (11^{\alpha-1} + \ldots + 1) \) is divisible by 5, contradiction.

\( x = 11, \ y = 7, \ z = 5: \) \( 2^k \cdot 5^\gamma - 4 = 11^\alpha - 1 = 10 \cdot (11^{\alpha-1} + \ldots + 1) \) is divisible by 5, contradiction.