We know that \( a_1^T = (1, 0, 2, -1) \)
\( a_2^T = (0, 1, -1, 0) \)
\( a_3^T = (-1, -1, 0, 1) \)
\( a_5^T = (-3, 0, 0, 1) \)

are active at \( (1, 1, 1, 2)^T \).

In order that \( p = (-1, 1, 1, a) \) to be a feasible direction we have

\[ a_1^T p \geq 0 \text{ which implies } (1, 0, 2, -1)(-1, 1, a) = -2a \geq 0 \]

\[ a_2^T p \geq 0 \text{ which implies } (0, 1, -1, 0)(1, 1, a) = 1 > 0 \]

\[ a_5^T p \geq 0 \text{ which implies } (-3, 0, 0, 1)(1, 1, a) = 3 + a \geq 0 \]

So \( -3 \leq a \leq 1 \).