Problem Statement:

Assume that you are to move 400 mm. You are currently at the position of 0 mm. You start the move from rest and you are to end the move at rest.

The motion parameters nominally set for the move are:

\[ v_s = \text{set speed} = 400 \text{ mm/s} \]
\[ a_r = \text{maximum rise accel} = 4000 \text{ mm/s}^2 \]
\[ a_f = \text{max fall decel} = 3000 \text{ mm/s}^2 \]
\[ j_m = \text{max jerk} = 20,000 \text{ mm/s}^3 \]

Determine the following information for the move:

1) Maximum acceleration and deceleration obtained during the move.
2) The total time required to make the move.
3) All profile types that are used to make the move (concave rise, convex rise, linear rise, steady velocity, convex fall, etc.).
4) For each profile type the distance covered and the time required as a delta from the beginning of the profile (not accumulated from the beginning of the move).