Problem 1. Let \( r(t) = (t, t^2, t - 6), \ -6 \leq t \leq 7. \)

- Find the unit tangent vector \( T(t). \)
- Find the curvature \( k(t). \)
- Find \( N(2) \)
- Find \( B(2) \)
- Find the velocity, acceleration and speed of a particle with the position function \( r(t). \)
- Find the tangential and normal components of the acceleration vector.