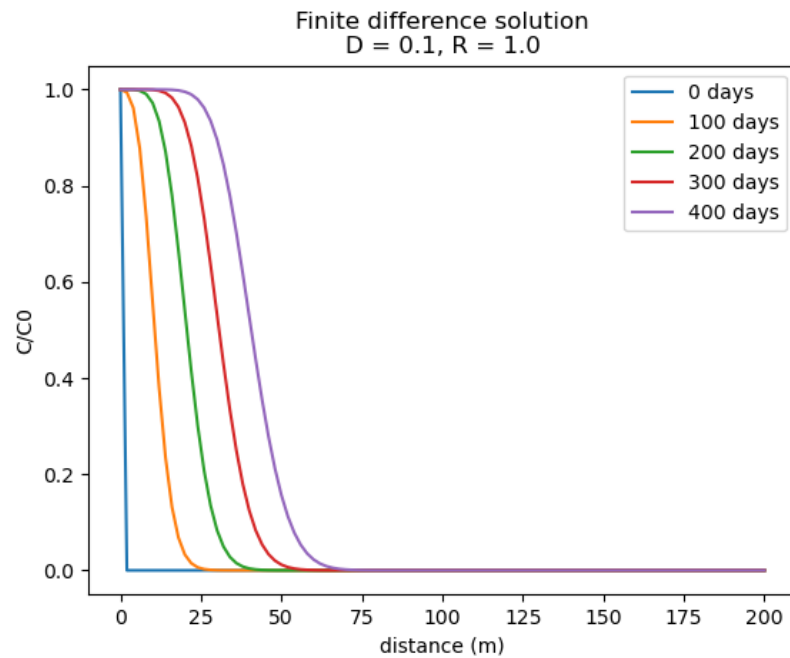
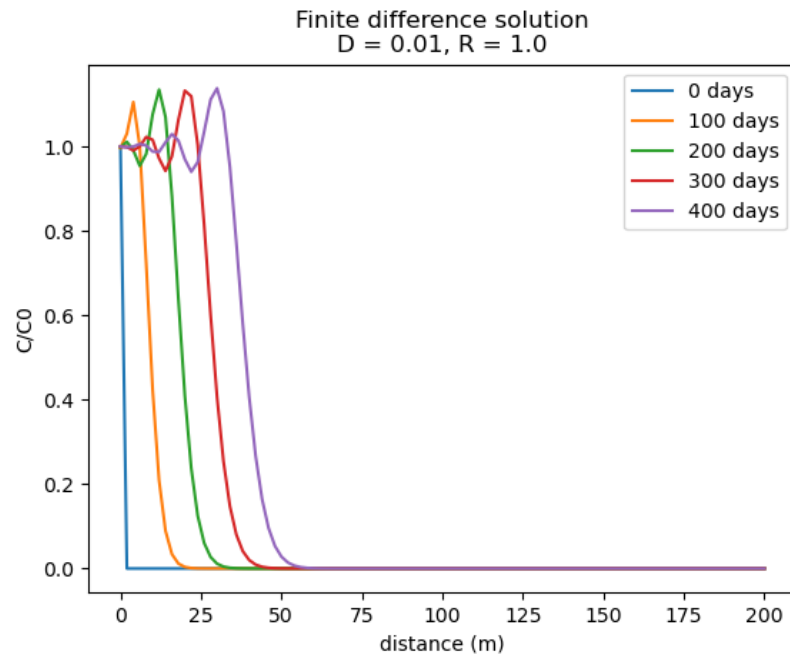
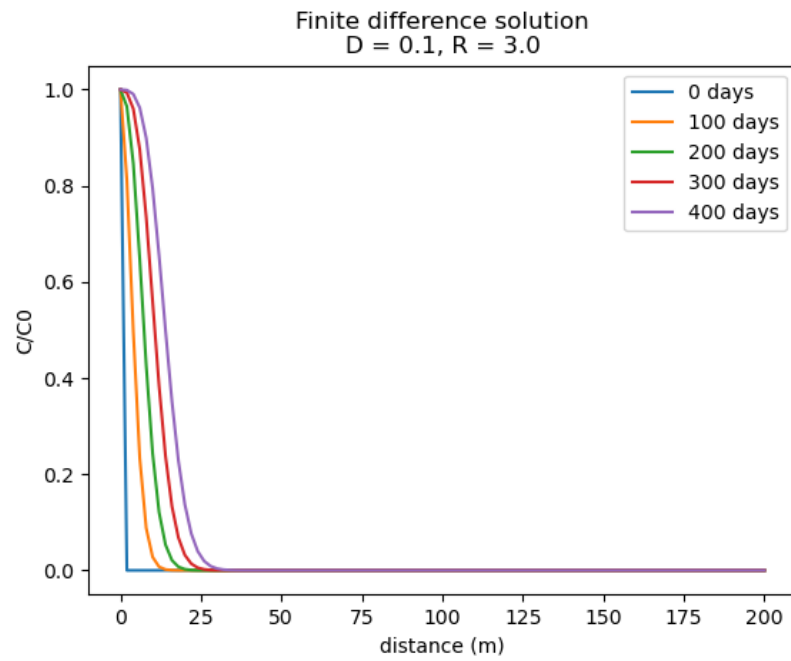
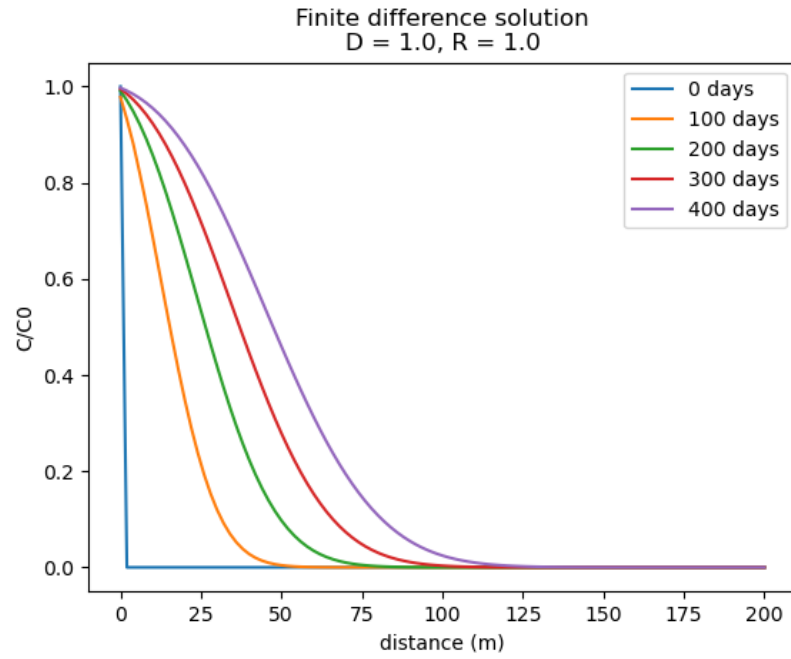
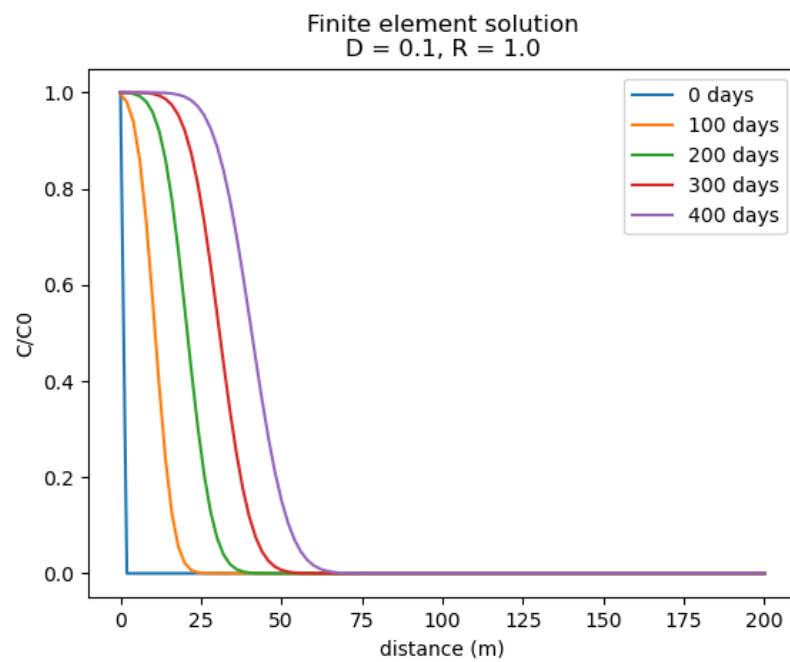
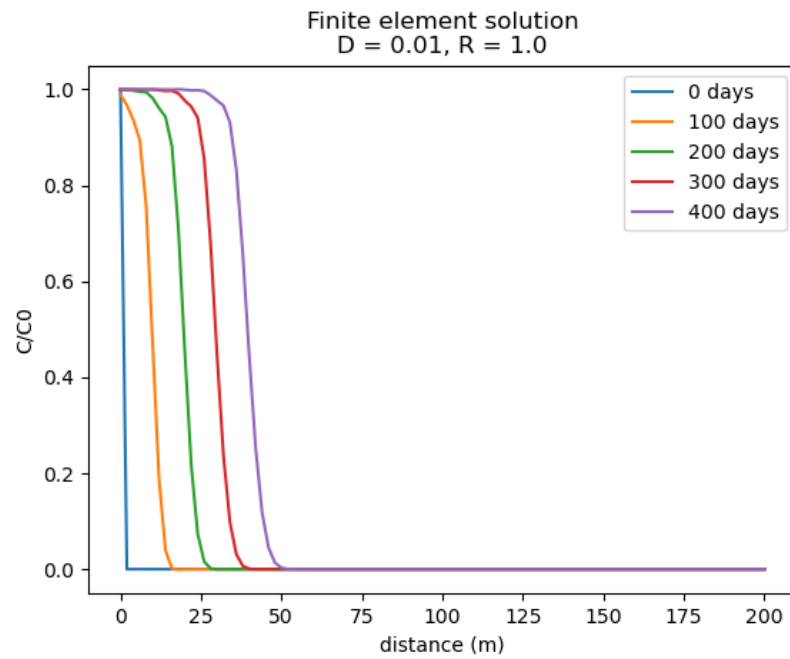


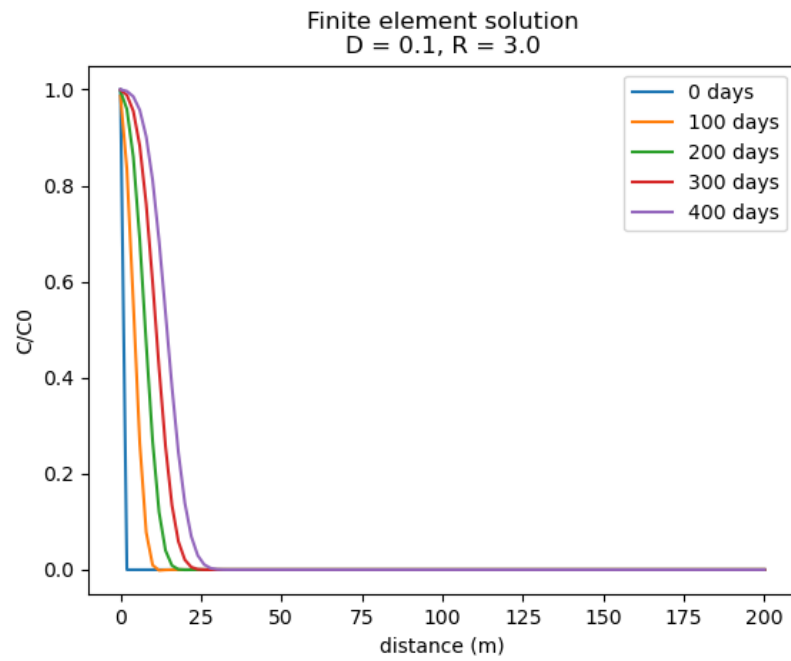
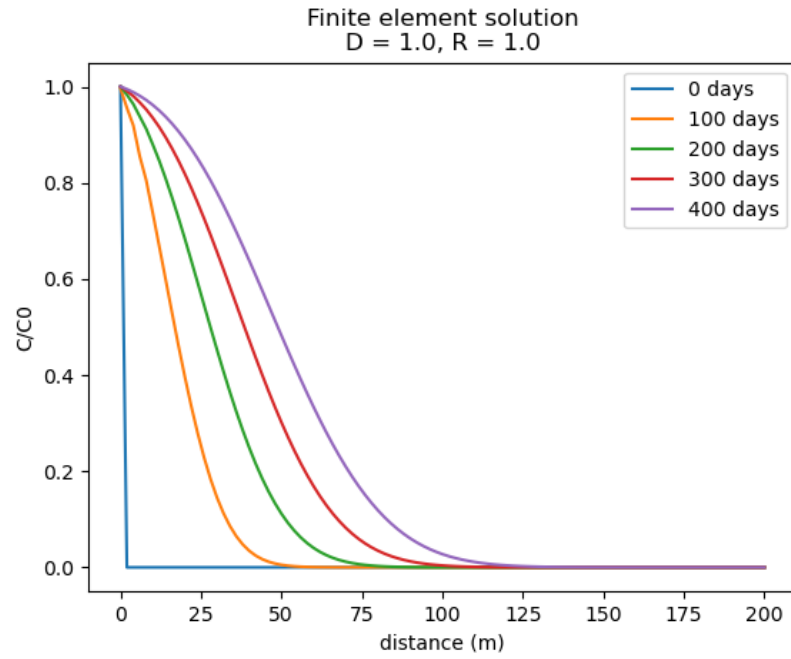
1. Crank-Nicholson finite difference solution





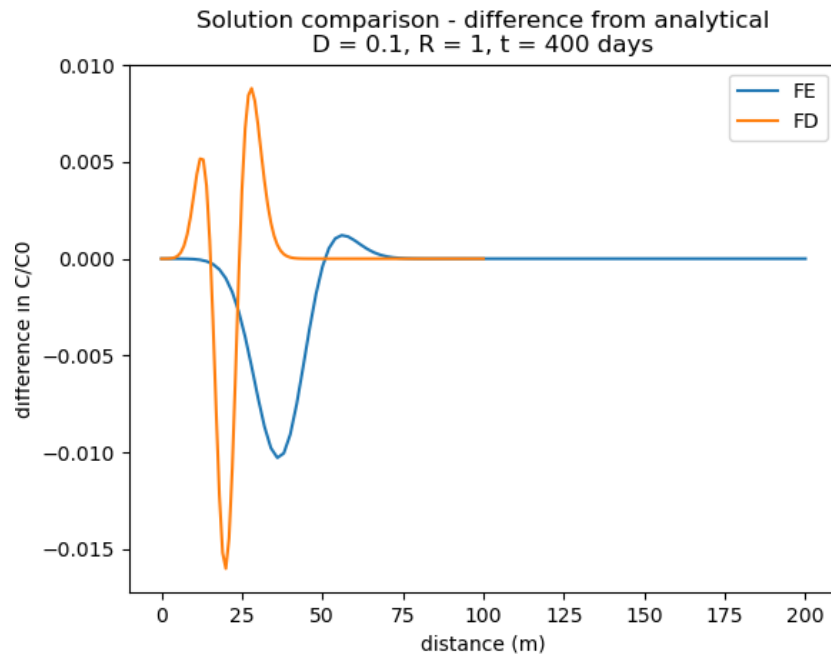
## 2. Galerkin finite element solution



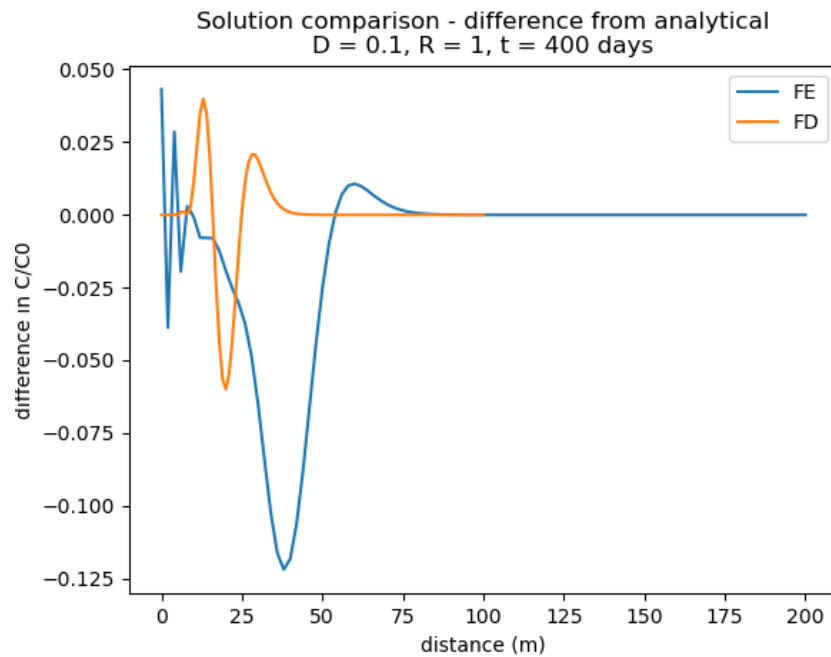


### 3. Comparison

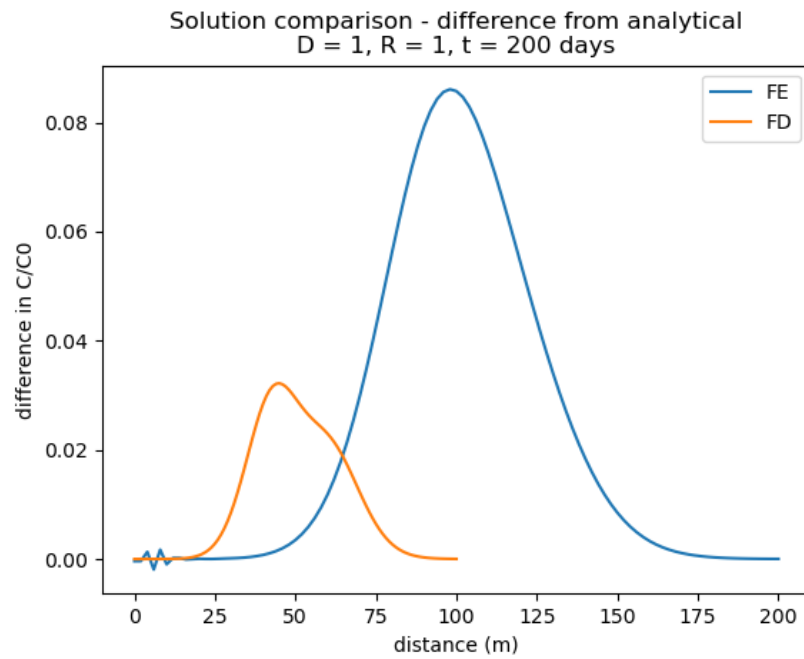
a.  $\Delta t = 10$  days



b.  $\Delta t = 50$  days



c.



4. It appears that FEM is more accurate for smaller time steps, and FDM is more accurate for the higher velocity.
5. The magnitude of the groundwater velocity has a large effect on the numerical solution. It pushes the concentration distribution farther across the grid and leads to larger errors for the FEM.