

## Exercise Sheet 7

### Exercise 1

Consider the advection-like partial differential equation

$$\frac{\partial \phi}{\partial t} + \frac{\partial \phi}{\partial x} = 0 \quad , \quad (1)$$

where  $\phi = \phi(x, t)$ . Derive an explicit numerical scheme employing a forward time derivative (t) and a central space derivative (x).

### Exercise 2

Draw the stencil diagram for the derived numerical scheme.