

**Exercise 19**

- (a) Show that  $S_2(x, y, t) = S(x, t)S(y, t)$  satisfies the diffusion equation  $S_t = k(S_{xx} + S_{yy})$ .
- (b) Deduce that  $S_2(x, y, t)$  is the source function for two-dimensional diffusions.