

## 'A Carbon Conscious Company'

$$\text{a) } \frac{dy}{dx} = -0.5e^{-0.5x} + 4 - 0.2x$$

$$x = 19, \frac{dy}{dx} = 0.200(3s. f.)$$

$$x = 21, \frac{dy}{dx} = -0.200(3s. f.)$$

The sign switches thus peak emissions must occur at  $19 \leq x \leq 21$

$$\text{b) } x = 39, y = 5.90(3s. f.)$$

$$x = 41, y = -2.10(3s. f.)$$

$$\text{c) } x_{n+1} = x_n - \frac{e^{-0.5x_n+4x_n-0.1x_n^2+2}}{-0.5e^{-0.5x_n+4-0.2x_n}}$$

$$x_1 = 40.5526, x_2 = 40.4940$$

$$x_3 = 40.4939$$

$$x = 40.49(4s. f.)$$