Mathematics II

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1. Find the area bounded by

$$y = x$$
$$y = 2 - x^2$$

2. Find dw/ds and dw/dt by chain rule:

$$w = e^{x+y} \sin(xy)$$

$$x = s^2 - t^3$$

$$y = s + 2t$$

3. Find dz/dx and dz/dy, where z = f(x,y) is given implicitly by the equation

$$ln(xyz) = xy^2$$