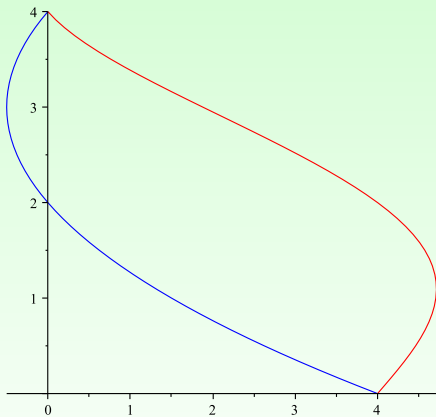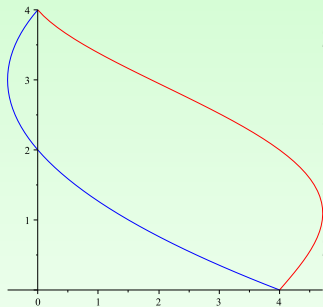Find the area of the following region:

Red curve: $x = y \cos\left(\frac{\pi y}{4}\right) + 4$

Signed area btw red curve & y-axis :

$$\int_0^4 y \cos\left(\frac{\pi y}{4}\right) + 4 \; dy.$$

Blue curve: $x = \frac{(y-3)^2 - 1}{2}$

Signed area btw blue curve & y-axis:

$$\int_0^4 \frac{(y-3)^2 - 1}{2} \; dy.$$

Area of region $= \displaystyle\int_0^4 y \cos\left(\frac{\pi y}{4}\right) + 4 \; dy - \int_0^4 \frac{(y-3)^2 - 1}{2} \; dy$

In each problem, you are given two or more functions.

(a) Use Maple to look at all of the functions given. Get a feel for what region is enclosed by those functions and only those functions.

(b) Find any relevant intersection points.

(c) Find the area of the regions bounded by the functions

1. $y = x^2 - 1$ and $y = 7 - x^2$

2. $y = \frac{5x}{x^2+1}$ and $y = x$