(1) Find
$$I = \int_R (x+y)^2 \, dx \, dy$$
where R is the square with vertices $(\pm 1, 0)$ and $(0, \pm 1)$,

(2) Let R now be the triangular region in the xy plane with vertices $(1,0), (2,1), (3,0)$. Find
$$I = \int_R \sqrt{\frac{x+y}{x-y}} \, dA$$

(3) Change the integral
$$\int_0^2 \int_0^{\sqrt{2x-x^2}} (x^2+y^2) \, dy \, dx$$
from rectangular to polar coordinates.