1. Find the center of mass of a thin, uniform plate whose shape is the region between $y=\cos x$ and the x-axis between $x=-\pi/2$ and $x=\pi/2$ with the density $\sigma(x,y)=1$.

2. Find the center of mass of a two-dimensional plate that occupies the square $[0,1]\times[0,1]$ and has density function xy

2. Find the center of mass of a two-dimensional plate that occupies the triangle $0\leq x\leq 1$, $0\leq y\leq x$, and has density function xy

3. Find the center of mass of a two-dimensional plate that occupies the upper unit semicircle centered at (0,0) and has density function y

4. Find the center of mass of a two-dimensional plate that occupies the upper unit semicircle centered at (0,0) and has density function x2

5. Find the center of mass of a two-dimensional plate that occupies the triangle formed by $x=2$, $y=x$ and $y=2x$ and has density function $2x$

6. Find the center of mass of a two-dimensional plate that occupies the triangle formed by $x=0$, $y=x$, and $2x+y=6$ and has density function x2

7. Find the center of mass of a two-dimensional plate that occupies the region enclosed by the parabolas $x=y2$, $y=x2$ and has density function $\sqrt{x}$

8. Find the center of mass of a two dimensional object that occupies the region $0\leq x\leq\pi$, $0\leq y\leq\sin x$, with density $\sigma=1$