

Double Integrals

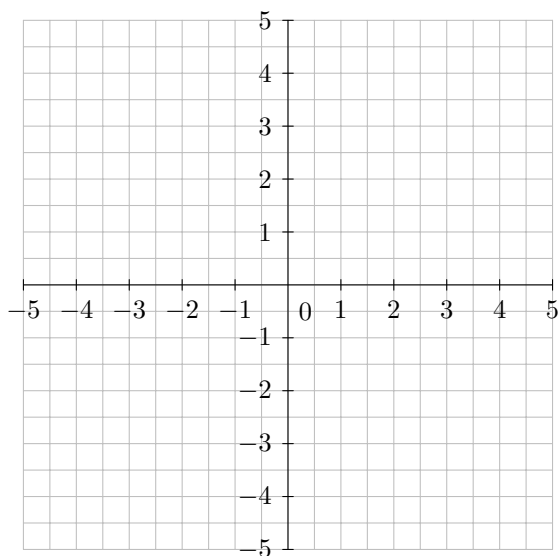
1. Find the area between the curves $y = x^2$ and $x = y^2$.

2. Find the area between the curves $x + 2y = 1$ and $x = y^2 - 2$.

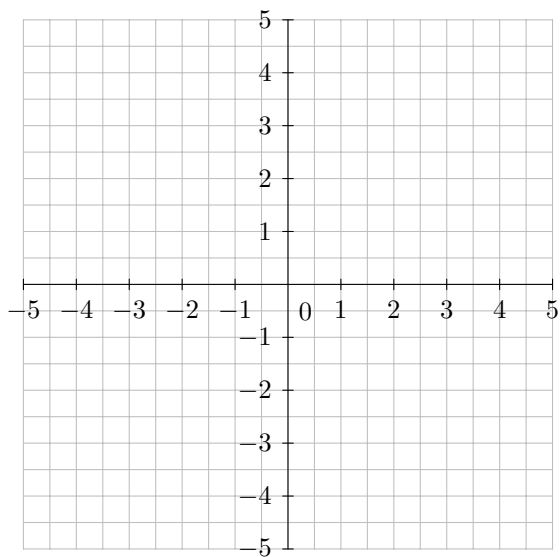
3. Given the equations below,

- Draw a picture of the curve formed by the equation.
- Write down an integral in rectangular coordinates that would give the area inside the curve.
- Convert the equation to polar coordinates.
- Write down an integral in polar coordinates that would give the area inside the curve.

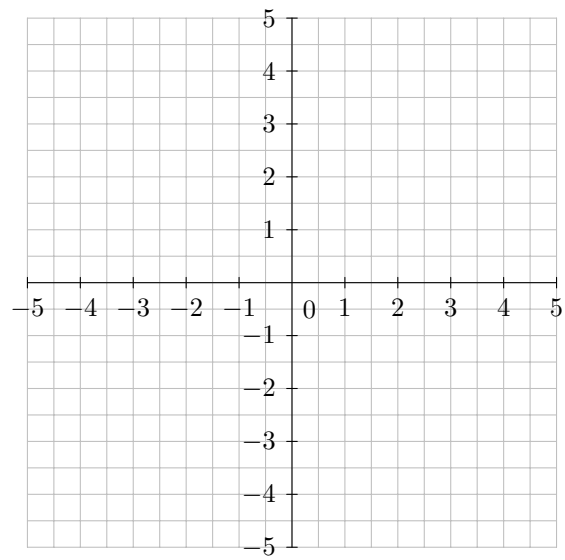
(a) $x^2 + y^2 = 4$



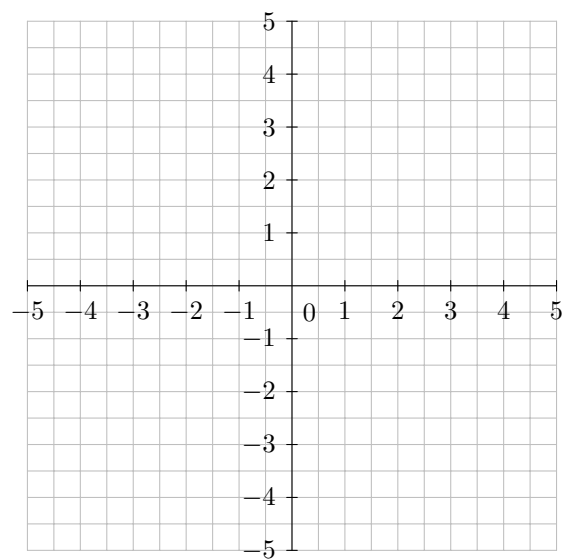
(b) $(x - 1)^2 + y^2 = 1$



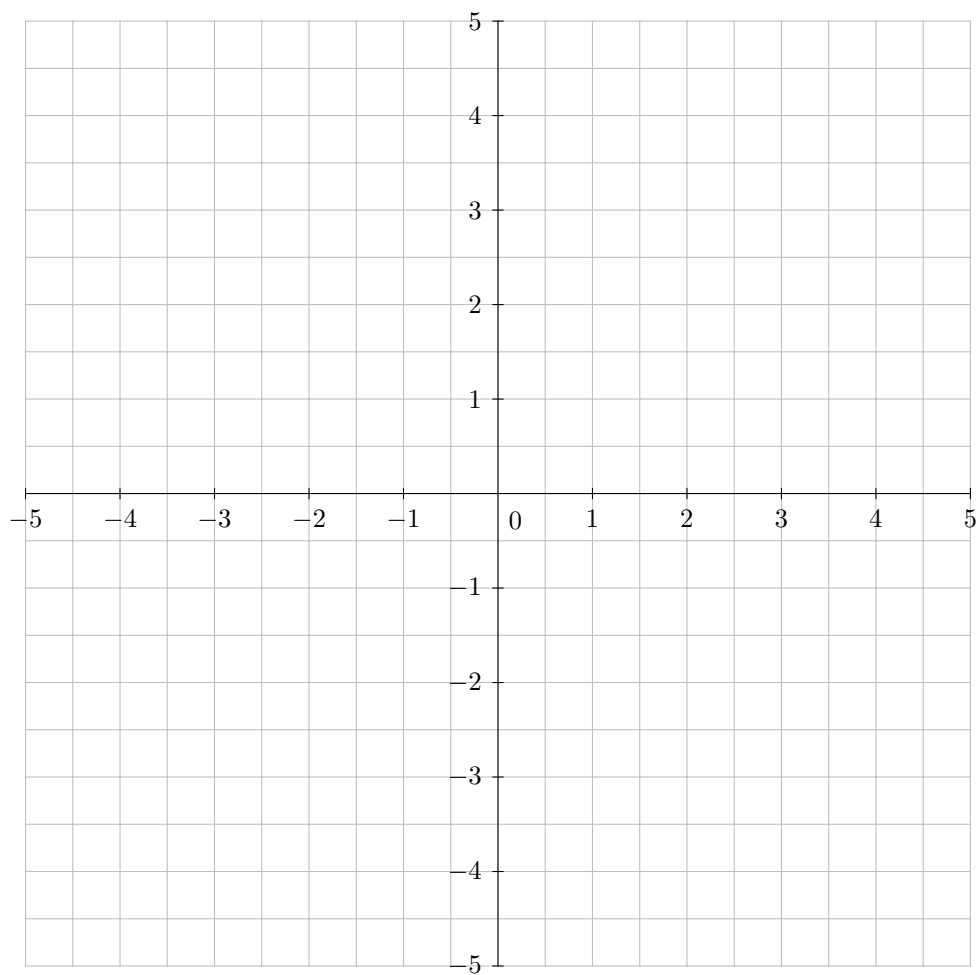
(c) $9x^2 + 4y^2 = 36$



(d) $x^2 + (y - 2)^2 = 4$



4. Draw a picture of the graphs of the following $r = 2\cos\theta$ and $r = 1$ on the axes below. Write down the points (x, y) where the graphs intersect.



Find the area inside both curves.