

In each example, algebraically derive the new equation using the given transformation. You do NOT need to multiply out.

1. The line $3x - 4y = 6$ goes through the point $(2, 0)$. Translate it so that it goes through the origin.
2. The “center” of $x^2 + y^2 - 4x - 2y = 0$ is $(2, 1)$. Translate it so that its “center” is at the origin.
3. The “center” of $x^2 - 4y^2 + 8x + 24y - 20 = 0$ is $(-4, 3)$.
 - (a) Translate it so that the “center” is at the origin.
 - (b) Stretch the curve in part (a) by a factor of 2 in the y direction.
4. Given the curve $y = 3 \cdot \cos(x - \pi/4)$, describe (in terms of transformations) how this curve differs from $y = \cos x$.
5. The curve $y = \frac{x^2}{x^2 + 1}$ goes through the origin.
 - (a) Translate it so that it goes through $(2, 0)$.
 - (b) Stretch the curve in part (a) by a factor of 2 in the y direction.