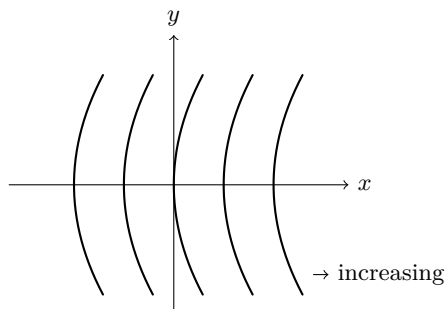


Question 3

A contour map consists of the curves $x - y^2 = c$ for all real c , labeled so values increase to the right. Reconstruct a simplest function producing the map. Find the level curve through $(3, -1)$ and decide where the function is positive.

Question 3 – Solution

Strategy Read the constant expression directly from the family of contours.



Function A simplest choice is $f(x, y) = x - y^2$. Any strictly increasing relabeling $g(f)$ would preserve the geometric contours but change their numerical labels.

Requested contour At $(3, -1)$, $c = 3 - 1 = 2$, so the curve is $x - y^2 = 2$.

Sign region The function is positive precisely when $x > y^2$, the region to the right of the parabola $x = y^2$.