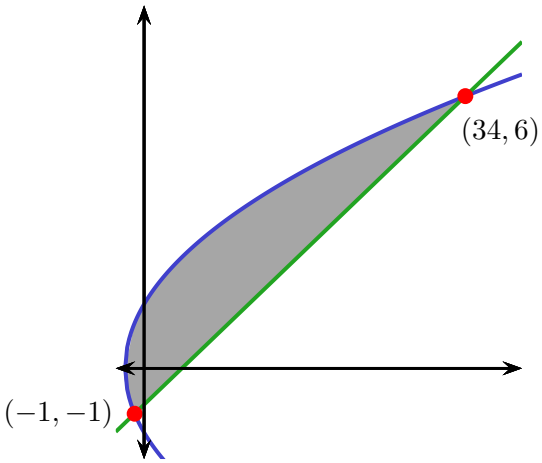
1. Let R be the region bounded on the left by the curve $x = y^2 - 2$ and on the right by the line $x = 5y + 4$.

   (a) (5 points) Sketch the region. *Label the coordinates of any points of intersection.*

   Solution:

   Setting $y^2 - 2 = 5y + 4$ and solving for y, we see that the curves intersect at the indicated points.



   (b) (5 points) Set up and evaluate a definite integral to find the area of R.

   Solution:

$$\begin{aligned} A &= \int_{-1}^{6} \left\{(5y + 4) - (y^2 - 2)\right\}\, dy \\ &= \int_{-1}^{6} (6 + 5y - y^2)\, dy \\ &= 6y + \frac{5y^2}{2} - \frac{y^3}{3} \Big|_{-1}^{6} \end{aligned}$$