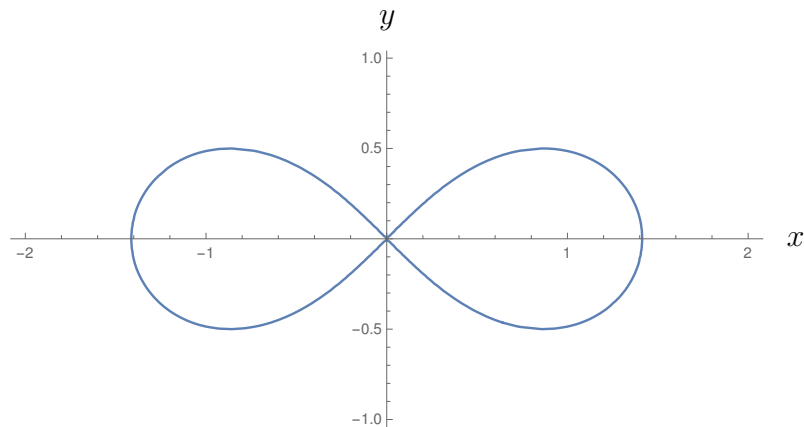




3. Below is the graph of  $(x^2 + y^2)^2 = 2x^2 - 2y^2$ .



Just by looking at the graph, answer the following questions.

(a) How many points on the graph are there for which  $y' = 0$ ?

(b) Choose any real number  $c$ .

i. How many points on the graph are there for which  $y' = c$ ?

ii. How many points on the graph are there for which  $x' = c$ ?

4. Consider the function  $y(x)$  given by  $y = x^2y^3 + x^3y^2$ , with  $y(1) = 1$ .

(a) What is the derivative of  $y(x)$  at  $x = 1$ ?

(b) What is the derivative of  $e^{y(x)}$  at  $x = 1$ ?