(1 point) **CUNY/CityTech/CollegeAlgebra_Trig/NonLinearSystems/circle-hyperbola.pg**

Solve the following system of equations.

$3x^2 - 2y^2 = 1$

$3x^2 + 2y^2 = 5$

Solution(s): ☐

- Enter your answers as points: $(x, y)$
- Because these systems are non-linear, you may have more than one solution.
- If you have more than one solution, enter your answers as a list of points: $(x_0, y_0), (x_1, y_1)$
- Use 'sqrt(...)' to enter radical answers, do not use decimal approximations.

**Hint:**

**Solution:**

# Elimination Method

$$3x^2 - 2y^2 = 1$$
$$3x^2 + 2y^2 = 5$$

$$6x^2 = 6$$
$$x^2 = 1$$
$$x = \pm 1$$

Pick one equation, substitute

$y = \pm 1$

Let $x = -1$

$3x^2 + 2y^2 = 5$

$3(-1)^2 + 2y^2 = 5$

$3(1) + 2y^2 = 5$

$3 + 2y^2 = 5$

$-3 \quad -3$

$$2y^2 = 2$$
$$y^2 = 1$$

→ $(-1, -1), (-1, 1)$ are solutions.

Let $x = 1$

$3x^2 + 2y^2 = 5$

$3(1)^2 + 2y^2 = 5$

$3(1) + 2y^2 = 5$

$3 + 2y^2 = 5$

$2y^2 = 2$

$y^2 = 1$

$y = \pm 1$

$\rightarrow$ $(1,-1), (1,1)$ are solutions

Solutions

$(x,y) \in \{(1,-1), (-1,1), (1,-1), (1,1)\}$

Four total solutions!