

---

Show your work on the following problems. You can use the Wolfram Alpha site to check your answers.

- 1) (2 pts) Solve the differential equation

$$y'(t) = -y^2(t), \quad y(1) = 3, \quad t \in [1, 5]$$

using separation of variables.

- 2) (5 pts) Solve the differential equation

$$y'(t) = \frac{2ty(t)}{1+t^2}, \quad y(0) = 1, \quad t \in [0, 5]$$

using separation of variables.