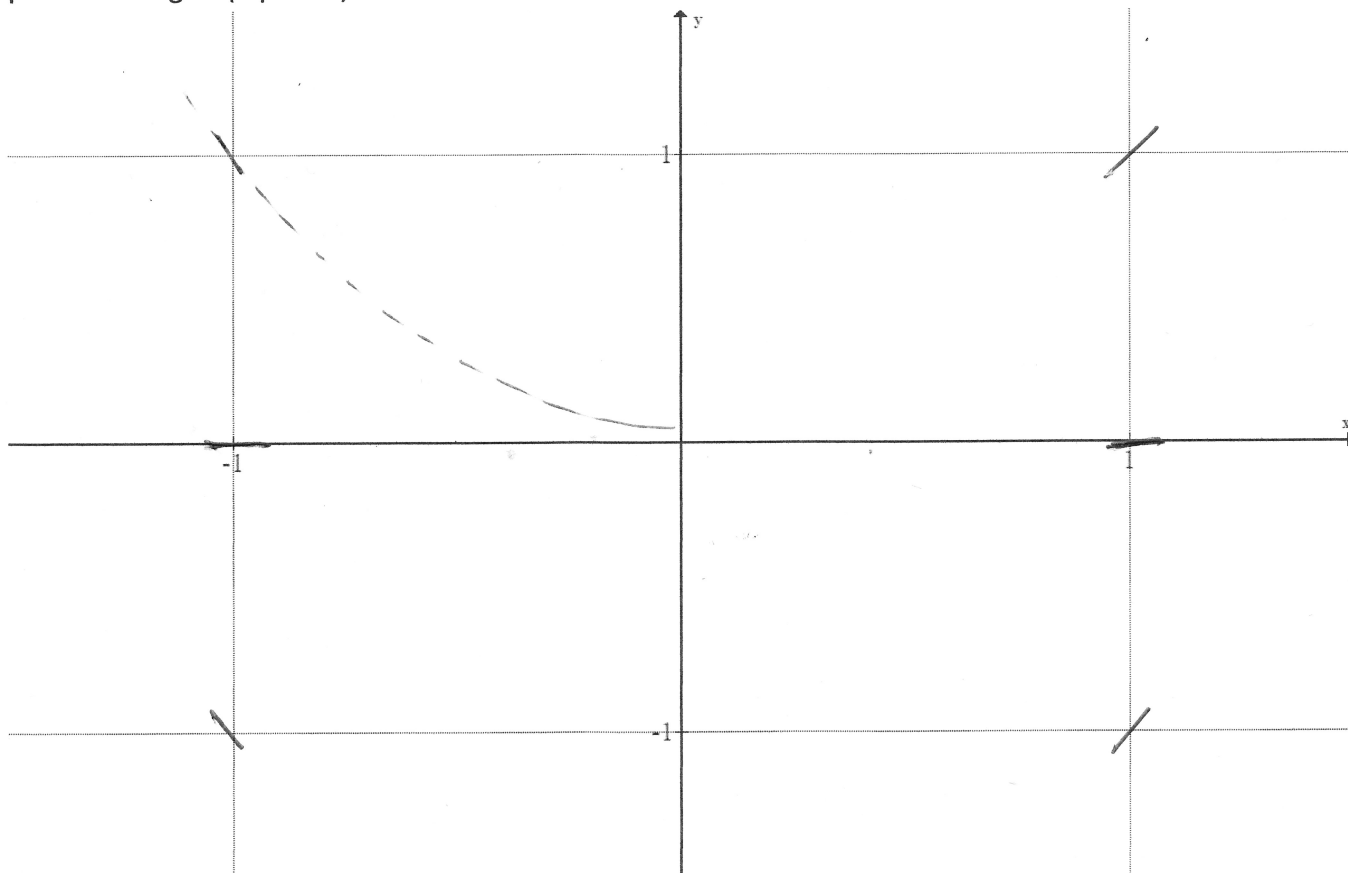


Calculus Study Guide: 9.3

Given the differential equation $\frac{dy}{dt} = \frac{y^2}{t}$ sketch its slope field. Draw a slope segment at each intersection point of the grid (9 points).



Given the initial condition $y(-1) = 1$, sketch the solution curve.

If $y(-1) = 1$, use Euler's Method with $\Delta x = 0.1$ to estimate $y(-0.8)$

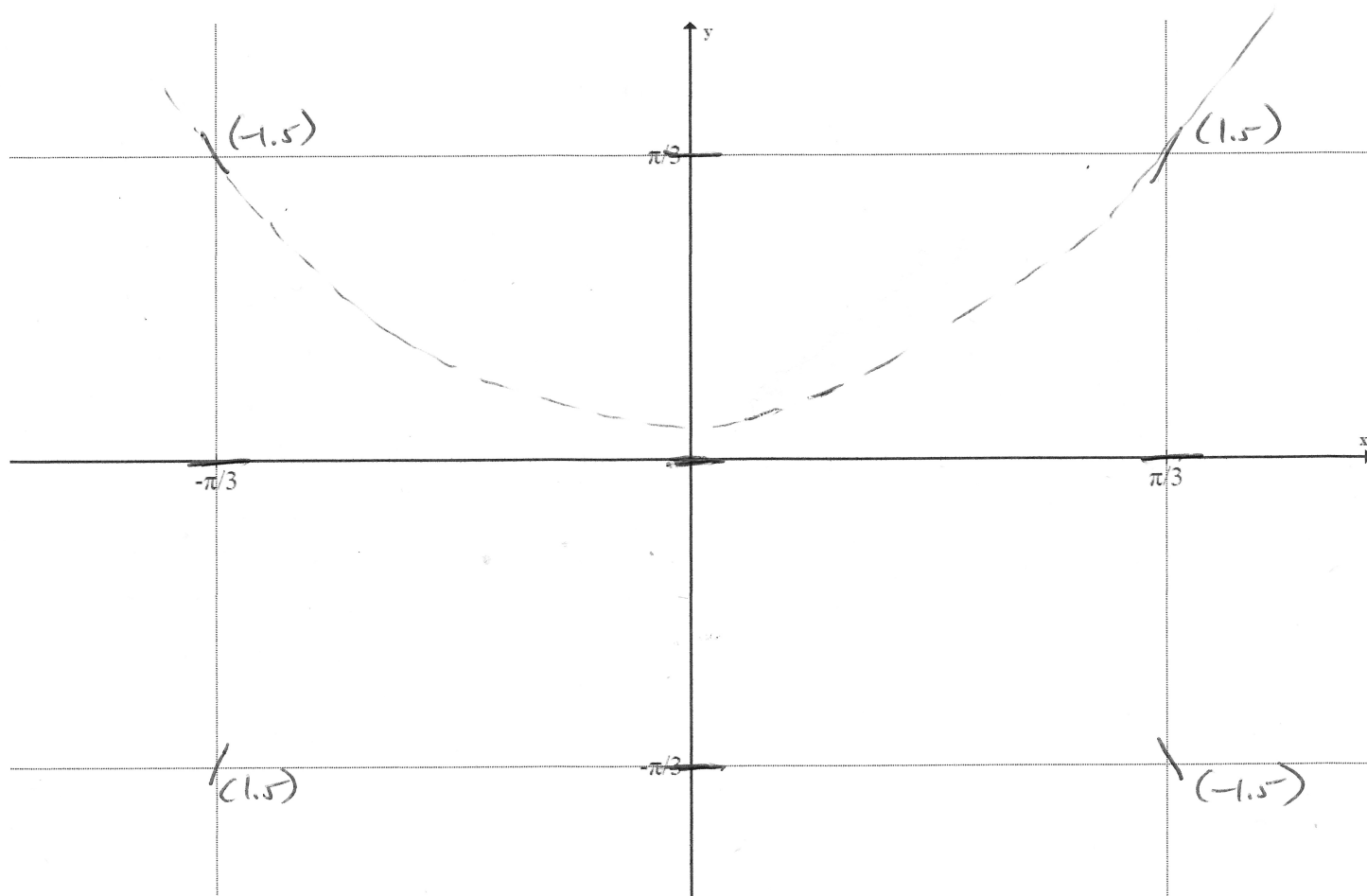
$$y(-0.9) = 1 + 0.1(-1) = 0.9$$

$$y'(-0.9) = \frac{(0.9)^2}{-0.9} = -0.9$$

$$y(-0.8) = 0.9 + 0.1(-0.9) = 0.81$$

$y(-0.8) \approx$ _____

Given the differential equation $\frac{dy}{dt} = \sin(t) \tan(y)$ sketch its slope field.



Given the initial condition $y(-\frac{\pi}{3}) = \frac{\pi}{3}$, sketch a plausible solution curve.

If $y(-\frac{\pi}{3}) = \frac{\pi}{3}$, use Euler's Method with $\Delta t = \frac{\pi}{6}$ to estimate $y(0)$.

$$y(-\pi/6) = \pi/3 + \pi/6 (-1.5) = 0.261$$

$$y'(-\pi/6) = -\frac{1}{2} + \tan(0.261) = -0.133$$

$$y(0) = 0.261 + \pi/6 (-0.133) = 0.191$$

$y(0) \approx$ _____