1.2 Exercises

Problem 1 Find the function $y = f(x)$ satisfying the DEQ $\frac{dy}{dx} = \frac{10}{x^2+1}$; with **initial condition** $y(0) = 0$.

Problem 2

Find the position function $x(t)$ of a moving particle with the given acceleration $a(t) = \frac{1}{(t+1)^3}$,

initial position $x_0 = x(0) = 0$, and **initial velocity** $v_0 = v(0) = 0$.

Problem 3 Suppose a woman has enough "spring" in her legs to jump from the ground (on earth) to a height of 2.25 ft.

Assume she jumps straight upward with the same initial velocity on the moon, where the surface gravitational acceleration is 5.3 ft/s^2.
How high above the surface will she rise?