Problem 54, Section 6.2

Solve the initial value problem $f'(x) = 1 - \dfrac{2x}{x^2+1}$, $(0, 2)$.

By integration, we get that $f(x) = x - \ln(x^2+1) + c$. Using the initial value $(0, 2)$, we get

$$(0) - \ln(0^2+1) + c = 2 \implies c = 2.$$

Therefore, our solution is $f(x) = x - \ln(x^2+1) + 2$.