

QUIZ 1

This is a closed-book and closed-notes quiz. You have 20 minutes to solve all the following problems. Write your answers clearly (for example, put the equality symbol where you need it and not just at the end of every line). Calculators are not allowed.

- (1) (10 points) Solve the differential equation

$$(x^2 + 4) \frac{dy}{dx} + 3xy = x,$$

with initial condition $y(0) = 1$.

- (2) (10 points) Find the solution of the differential equation

$$2y \frac{dy}{dx} = \frac{x}{\sqrt{x^2 - 16}},$$

with initial value $y(5) = 2$.

- (3) (5 BONUS points) Find an antiderivative of the function $f(x) = xe^{x^2}$.