CALCULUS II, SUMMER 2015 - ODE WORKSHEET 1

Problem 1. Solve $y' = y$ on $(-\infty, \infty)$ with $y = 8$ when $x = 3$.

Problem 2. Solve $y' = 4y$ on $(-\infty, \infty)$ with $y = 3$ when $x = -2$.

Problem 3. Solve $y' = 5$ on $(-\infty, \infty)$ with $y = -2$ when $x = 4$.

Problem 4. Solve $\frac{dy}{dx} = 5$ on $(-\infty, \infty)$ with $y = 10$ when $x = 4$.

Problem 5. Solve $\frac{dx}{dt} = \frac{1}{1+t^2}$ on $(-\infty, \infty)$ with $x = 0$ when $t = \sqrt{3}$.

Problem 6. Solve $\frac{dx}{dt} = \frac{1}{1+t^2}$ on $(-\infty, \infty)$ with $x = \frac{\pi}{6}$ when $t = -\frac{1}{\sqrt{3}}$.

Problem 7. Solve $\frac{dx}{dt} - \frac{1}{1+t^2}x = 0$ on $(-\infty, \infty)$ with $x = e^{\pi/6}$ when $t = \frac{1}{\sqrt{3}}$.

Problem 8. Solve $y' = \frac{1}{1+x^2}y$ on $(-\infty, \infty)$ with $y = 5$ when $x = 0$.

Problem 9. Solve $(x^2 + 1)y' + y = 1$ on $(-\infty, \infty)$ with $y = 5$ when $x = 0$.

`Suggested reading`: Apostol, §§8.1 - §§8.5.

Date: July 20, 2015.