Calculus I, Gradescope Assignment, Week 9

Q1. Calculate

$$\int_{-1}^{1} \frac{1}{1+e^{\sin x}}\, dx.$$

3 marks

Q2. Calculate $\iint_D \cos(x+y)\, dxdy$, where $D = [0,\pi] \times [0,\pi]$. 3 marks

Q3. Solve the differential equation $y' + y = 2e^{-2x}$. 3 marks

Q4. Solve the initial value problem $(x + ye^{y/x})dx - xe^{y/x}dy = 0$, with $y(1) = 0$. 5 marks

Q5. Solve the initial value problem $y'' + \frac{1}{4}y = 0$, $y(\pi) = 1,\ y'(\pi) = -1$. 5 marks

Q6. Solve the initial value problem $y'' - 2y' + 5y = 0$, $y(\pi/2) = 0,\ y'(\pi/2) = 2$. 5 marks