WRITTEN HOMEWORK 2

MATH 46 SEC 030

This homework will be due on Thursday Apr 16th.

Question 1. Find the general solution of the separable equation

$$dx - \frac{1}{y^2 - 6y + 13}dy = 0$$

Question 2. Find the general solution of the separable equation

$$y' = \frac{xe^x}{2y}$$

Question 3. Find the general solution of the homogenous equation

$$y' = tan(\frac{y}{x}) + \frac{y}{x}$$

Question 4. Solve the initial value problem

$$\begin{cases} y' = e^{\frac{y}{x}} + \frac{y}{x} \\ y(1) = 2 \end{cases}$$

Question 5. Determine whether the following differential equation is exact. If yes, solve it.

$$(y^2\cos(x) + e^y)dx + (2y\sin(x) + xe^y)dy = 0$$

Question 6. Determine whether the following differential equation is exact. If yes, solve it.

$$(4t^3y^3 - 2ty)dt + (3t^4y^2 - t^2)dy = 0$$