Math 3213 - Differential Equations

Exam 1 - 2019.02.26

Name: _____

Solve each of the following differential equations.

1. $t\,x'(t) = 6te^{2t} + x(t)(2t-1)$
2. $2x(y+1) - y\dfrac{\mathrm{d}y}{\mathrm{d}x} = 0,\ y(0) = -2$
3. $(4xy + 3y^2 - x)\,\mathrm{d}x + x(x+2y)\,\mathrm{d}y = 0$
4. $y^{(4)} + 5y'' = 3x^2 - 4$
5. $\dfrac{\mathrm{d}^2x}{\mathrm{d}t^2} + 4\dfrac{\mathrm{d}x}{\mathrm{d}t} + 5x = 10,\ x(0) = 0,\ x'(0) = 0.$
6. $(3x - 2y + 1)\,\mathrm{d}x + (3x - 2y + 3)\,\mathrm{d}y = 0$