MAT 239 (Differential Equations), Prof. Swift
Exam 1 Review

1. Put a "Y" or "N" in the blank, indicating if the ODE has the indicated property. Use the differential form to test exactness.

___ Separable

___ Linear $\frac{dy}{dx} = xy + x$ or $(xy + x)dx - dy = 0.$

___ Exact

___ Separable

___ Linear $\frac{dy}{dx} = x^2 - y^2$ or $(x^2 - y^2)dx - dy = 0.$

___ Exact

___ Separable

___ Linear $\frac{dy}{dx} = -\frac{x^2 + 2xy + y^2}{x^2 + 2xy}$ or $(x^2 + 2xy + y^2)dx + (x^2 + 2xy)dy = 0.$

___ Exact

You should have exactly one Separable with a "Y", one Linear with a "Y", and one Exact with a "Y". Solve that ODE (i.e., find the general solution) using each method.

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