

**Matching Differential Equations**

Match each differential equation in the left column with the correct separation of variables in the right column. Several of the differential equations cannot be solved by separation so answer choice B can be used more than once.

\_\_\_\_\_ **1.**  $\frac{dy}{dx} = x - 2y + 12$

\_\_\_\_\_ **2.**  $\frac{dy}{dx} = e^{y-x}$

\_\_\_\_\_ **3.**  $\frac{dy}{dx} = x^2 + 12xy$

\_\_\_\_\_ **4.**  $\frac{dy}{dx} = xy + 12x$

\_\_\_\_\_ **5.**  $\frac{dy}{dx} = -2y + 12$

\_\_\_\_\_ **6.**  $\frac{dy}{dx} = \frac{x+12}{2y}$

\_\_\_\_\_ **7.**  $\frac{dy}{dx} = e^{x+y}$

\_\_\_\_\_ **8.**  $\frac{dy}{dx} = x - 12y$

\_\_\_\_\_ **9.**  $\frac{dy}{dx} = \frac{x}{12y}$

**A.**  $\frac{1}{y+12} dy = x dx$

**B.** non-separable

**C.**  $\frac{1}{y-6} dy = -2 dx$

**D.**  $e^{-y} dy = e^{-x} dx$

**E.**  $12y dy = x dx$






**F.**  $2y dy = (x + 12) dx$

**G.**  $e^{-y} dy = e^x dx$

## Procedures for Solving Differential Equations

Instructions:

1. First, sort the cards into four stacks according to the shape in the upper left hand corner.
2. For each stack, put the cards in the correct order for solving a differential equation.
3. Watch out! In each set of cards, there is one card that shows a false step, based on a common mistake that students might make in solving that differential equation. Set that card aside, insert the card showing the correct step instead, and then describe the mistake or misunderstanding that leads to that false step.

Symbol	Card Sequence	False step card & mistake
		Card _____ Mistake:
		Card _____ Mistake:
		Card _____ Mistake:
		Card _____ Mistake:
		Card _____ Mistake: