

**Break-Ground:**

## **Jeopardy! Of calculus**

*Two young mathematicians discuss a ‘Jeopardy!’ version of calculus.*

Check out this dialogue between two calculus students (based on a true story):

**Devyn:** (Pretending to Alex Trebek) I’ve got a new costume.

**Riley:** Whoa! You look just like Trebek!

**Devyn:** In *Jeopardy!*, I, Trebek, give you an answer, and you must tell me the question.

**Riley:** Uh Alex, ‘What are the rules of *Jeopardy!*?’

**Devyn:** Ha. Exactly! Let’s play a different version where I’ll tell you a derivative, and you tell me the function. Are you ready?

**Riley:** I’ll take “Formulas for slope” for \$200.

**Devyn:**  $3 \cdot e^{3x}$

**Riley:** I’ve got an answer! Actually, I’ve got three different answers, I mean questions!

- (a) “What’s the derivative of  $e^{3x}$ ?
- (b) “What’s the derivative of  $e^{3x} + 1$ ?
- (c) “What’s the derivative of  $e^{3x} - 1$ ?

**Devyn:** Hmmm. Now I’m not sure which one it was.

**Riley:** What about if you had given me  $\frac{\sin(x)}{x}$ ?

**Problem 1** *How many functions whose derivative is  $3 \cdot e^{3x}$  are there?*

**Multiple Choice:**

- (a) *Zero*
- (b) *One*
- (c) *Two*

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Learning outcomes: Compute basic antiderivatives. Solve basic initial value problems.

*Jeopardy! Of calculus*

- (d) *Three*
  - (e) *Four*
  - (f) *Infinitely many* ✓
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**Problem 2** *How many functions whose derivative is  $3 \cdot e^{3x}$  that equal 1 at  $x = 0$  are there?*

**Multiple Choice:**

- (a) *Zero*
  - (b) *One* ✓
  - (c) *Two*
  - (d) *Three*
  - (e) *Four*
  - (f) *Infinitely many*
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