

Name: _____
AP Calc

Date: _____
Ms. Loughran

Do Now:

1. If the function $f(x) = \begin{cases} 3ax^2 + 2bx + 1, & x \leq 1 \\ ax^4 - 4bx^2 - 3x, & x > 1 \end{cases}$ is differentiable for all real values of x ,
then $b =$

- (A) 0 (B) $-\frac{11}{4}$ (C) $\frac{1}{4}$ (D) $-\frac{7}{16}$ (E) $-\frac{1}{4}$

2. The position of a particle moving along the x -axis at time t is given by $x(t) = e^{\cos 2t}$, $0 \leq t \leq \pi$. For which of the following values of t will $x'(t) = 0$?

- I. $t = 0$
II. $t = \frac{\pi}{2}$
III. $t = \pi$

- (A) I only (B) II only (C) I and III only (D) I and II only (E) I, II and III