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Name: \_\_\_\_\_

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1. Consider  $f(x) = x + \sin(x)$  on  $[0, 2\pi]$ . Find *all* numbers  $c$  in  $(0, 2\pi)$  guaranteed by the mean value theorem.

2. Find the linear approximation  $L(x)$  for the function  $f(x) = x + \frac{3}{x}$  at  $x = 3$ .

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Name: \_\_\_\_\_

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1. Consider  $f(x) = 2 + \cos(x)$  on  $[0, 2\pi]$ . Find *all* numbers  $c$  in  $(0, 2\pi)$  guaranteed by the mean value theorem.

2. Find the linear approximation  $L(x)$  for the function  $f(x) = 2e^x - x$  at  $x = \ln(3)$ .