Quiz 8 Key — MA16010 — October 23, 2017
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Min	Mean	Max
1	3.6	5

For this quiz, $f(x) = x^2 e^{3x}$.

1. Find $f'(x)$.

   $$f'(x) = 2xe^{3x} + 3x^2 e^{3x} = x(2 + 3x)e^{3x}$$

2. Find the x-values of the critical points of $f(x)$.

   $x = 0$ and $x = -2/3$.

3. Find the y-values of the critical points of $f(x)$.

   $f(0) = 0$, $f(-2/3) = \frac{4}{9}e^{-2} = 0.06015...$

4. Find $f(1)$ and $f(-1)$.

   $f(-1) = e^{-3} = 0.0498...$, $f(1) = e^3 = 20.0855...$

5. Find the absolute maximum and minimum values of $f(x)$ on the interval $[-1, 1]$.

   Max: e^3. Min: 0.