

# Problems of the Month

## January 2018

### General Problem:

A car that averages 33mpg travels 3500 miles for a road trip. The driver paid \$259 for fuel. What was the average cost of fuel?



### Calculus Problem:

What is the 10<sup>th</sup> derivative of the function below?

$$f(x) = (2^x) \cdot (e^x)$$



### Challenge Problem:

Find the value of  $a$  that maximizes the average value of the function below over the interval  $[-1, a]$  for  $-1 \leq a \leq 2$ .

$$f(x) = x^3 - 2x^2 - x + 2$$