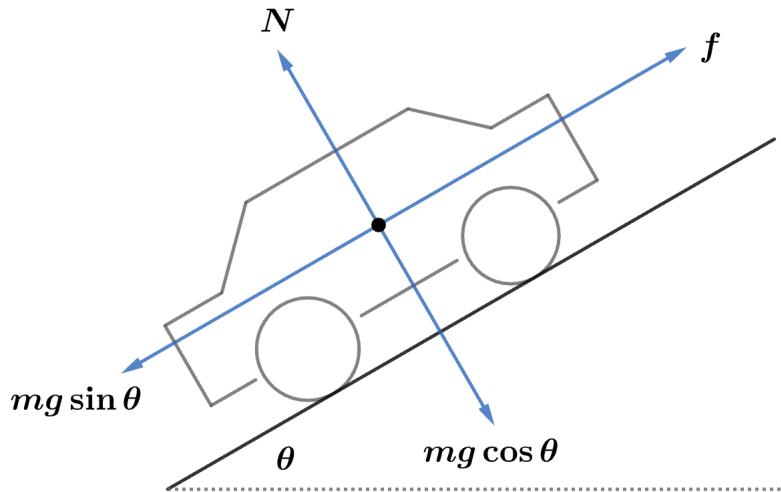


2010 F=ma Exam: Problem 8

Kevin S. Huang



The car uses static friction to accelerate up the hill. By Newton's 2nd law,

$$f - mg \sin \theta = ma$$

$$a = \frac{f}{m} - g \sin \theta$$

To maximize acceleration, we take the maximum value of static friction,

$$f = \mu N = \mu mg \cos \theta$$

$$a = g(\mu \cos \theta - \sin \theta)$$

so the answer is B.