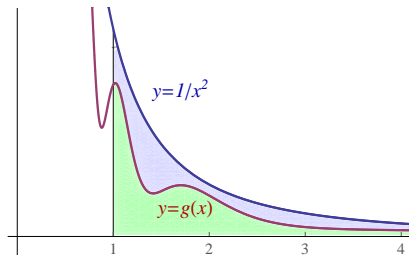# Clicker Questions

Clicker Question 1

Comparing two improper integrals

We saw on Monday that $\int_1^\infty \frac{1}{x^2}\,dx$ is convergent. Suppose that $0 \le g(x) \le \frac{1}{x^2}$ for all $x \ge 1$. What do you think we can say about

$$\int_1^\infty g(x)\,dx\,?$$

A. impossible to tell, even with the formula for $g(x)$

B. might be convergent or divergent, depending on the formula for $g(x)$

C. has a negative value

D. definitely convergent

E. definitely divergent

Clicker Question 2

Just a moment

A 6-gram object is placed 3 cm to the right of the origin, and a 14-gram object is placed 2 cm to the left of the origin. How much mass must be placed 1 cm to the right of the origin to make the **total moment** (with respect to the origin) **equal to 0**?
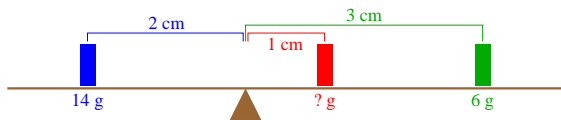
A. 5 grams

B. 10 grams

C. 44 grams

D. 8 grams

E. none of the above

A massive undertaking

A lamina with density $\rho = 4$ is in the shape of the region between the graphs of $y = 1/x$ and $y = (3 - x)/2$. Find the mass of the lamina.

A. $3 - 4\ln 2$

B. $\ln 2 - 3/4$

C. $3/4 - \ln 2$

D. $4\ln 2 - 3$

E. none of the above

The calcuation

Setting the two functions equal, we find that the graphs intersect at $x = 1$ and $x = 2$. So the mass is

$$4 \int_1^2 \left(\frac{3 - x}{2} - \frac{1}{x} \right) dx.$$