A 4 meter long beam carries a distributed load of \( w(x) = 80x \) N/m, as shown below. Also pictured is a typical slice.

Download Worksheet #1. Work the worksheet first, then answer these questions.

a. What is the force on the slice?
   - \( dx \)
   - \( 80x \) dx
   - \( (2 - x)(80x \) dx
   - \( (x)(80x \) dx
   - \( \int_0^4 (x)(80x \) dx
   - \( \int_0^4 (2 - x)(80x \) dx
   - \( \int_0^4 80x \) dx
   - \( \int_0^4 dx \)

b. What is the moment about \( A \) caused by the force on the slice?
   - \( dx \)
   - \( 80x \) dx
   - \( (2 - x)(80x \) dx
   - \( (x)(80x \) dx
   - \( \int_0^4 (x)(80x \) dx
   - \( \int_0^4 (2 - x)(80x \) dx
   - \( \int_0^4 80x \) dx
   - \( \int_0^4 dx \)

c. What is the total moment about \( A \)?
   - \( dx \)
   - \( 80x \) dx
   - \( (2 - x)(80x \) dx
   - \( (x)(80x \) dx

Instructions

- This assignment counts as Extra Credit.
- It's all about notation and labeling.
- Work the worksheets.
- All questions have limited submits.
d. What is the total force on the beam?

\[ \int_{0}^{4} (x)(80x \, dx) \]

\[ \int_{0}^{4} 80x \, dx \]

\[ \int_{0}^{4} (2 - x)(80x \, dx) \]

\[ \int_{0}^{4} dx \]
Refer to Worksheet #2.

2. **Question Details**

a. What is the area of a typical slice?

- $\sqrt{1 - y} \, dy$
- $-6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} \sqrt{1 - y} \, dy$
- $\int_{-3}^{1} (-1 - y)\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6(-1 - y)\sqrt{1 - y} \, dy$

b. What is the weight of the entire plate?

- $\sqrt{1 - y} \, dy$
- $-6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} \sqrt{1 - y} \, dy$
- $\int_{-3}^{1} (-1 - y)\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6(-1 - y)\sqrt{1 - y} \, dy$

c. What is the moment about $l$ caused by the weight of a typical slice?

- $\sqrt{1 - y} \, dy$
- $-6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} \sqrt{1 - y} \, dy$
- $\int_{-3}^{1} (-1 - y)\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6(-1 - y)\sqrt{1 - y} \, dy$

d. What is the total moment about $l$?

- $\sqrt{1 - y} \, dy$
- $-6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} \sqrt{1 - y} \, dy$
- $\int_{-3}^{1} (-1 - y)\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6\sqrt{1 - y} \, dy$
- $\int_{-3}^{1} 6(-1 - y)\sqrt{1 - y} \, dy$
A thin plate is in the shape of the region bounded by $y = 4 - x^2$, $x = 0$, and the x-axis, as shown below. Both axes are measured in inches. The plate is made of metal that weighs 0.25 lbs/in². A typical slice is also pictured.

For each expression, determine the appropriate notation that should go in the blank.

a. $\text{______} = 0.25(4 - x^2) \, dx$
   - $A$
   - $M_x$
   - $dA$
   - $dM_x$
   - $F$
   - $M_y$
   - $dF$
   - $dM_y$

b. $\text{______} = \int_0^2 (4 - x^2) \, dx$
   - $A$
   - $M_x$
   - $dA$
   - $dM_x$
   - $F$
   - $M_y$
   - $dF$
   - $dM_y$

c. $\text{______} = 0.25x(4 - x^2) \, dx$
   - $A$
   - $M_x$
   - $dA$
   - $dM_x$
   - $F$
   - $M_y$
   - $dF$
   - $dM_y$
A thin plate is in the shape of the region bounded by \( y = 4 - x^2 \), \( x = 0 \), and the \( x \)-axis, as shown below. Both axes are measured in inches. The plate is made of metal that weighs 0.25 lbs/in\(^2\). A typical slice is also pictured.

For each expression, determine the appropriate notation that should go in the blank.

a. \[ \text{_______} = \int_0^2 \frac{1}{2} x(4 - x^2) \, dx \]

b. \[ \text{_______} = (4 - x^2) \, dx \]

c. \[ \text{_______} = \int_0^2 0.25(4 - x^2) \, dx \]