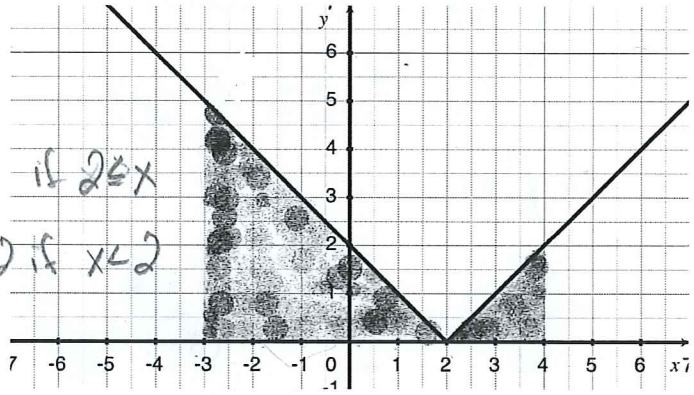
Quiz 1 (AM)

Key

Show *all* your work. Reasonable supporting work must be shown to earn credit. There are *two* sides to this quiz.

1. Consider the graph below for the following questions.



(a) [1] Find the rule/expression of the function

absolute value shifted right 2

$g(x) = |x-2|$ OR $g(x) = \begin{cases} x-2 & \text{if } 2 \le x \\ -x+2 & \text{if } x < 2 \end{cases}$

(b) [3] (WebHW2 #1) Set up a definite integral that yields the area of the shaded region.

$\int_{-3}^{4} f(x)\,dx$ or $\int_{-3}^{4} |x-2|\,dx$ or $\int_{-3}^{2} -x+2\,dx + \int_{2}^{4} x-2\,dx$

limits (+1) correct placement (+1.5)

dx (+1.5) $f(x)$ notation (+1)

(c) [2] (§5.3 #52a) Compute/find the definite integral that you set up above.

triangle big + triangle little

$\frac{1}{2}\cdot 5\cdot 5 + \frac{1}{2}\cdot 2\cdot 2$

$\frac{25}{2} + 2$

$\frac{29}{2}$ or 14.5

Note: There are lots of ways to compute the area.

area (+1.5)

broke into areas to compute (+1.5)

formula for Δ (+1.5)

computations (+1.5)

try to use FTC (+1.5)

look for antider (+1.5)

get antider (+1.5)

plug in ends (+1.5)

2. [4] (definiteActivity #3) Given $\int_2^4 g(x)\,dx = 25$, $\int_2^4 x\,dx = 6$, and $\int_0^2 x\,dx = 2$, find:

(a) $\int_2^4 x + 3g(x)\,dx$

$= \int_2^4 x\,dx + \int_2^4 3g(x)\,dx$ (+1.5)

$= \int_2^4 x\,dx + 3\int_2^4 g(x)\,dx$ (+1.5)

$6 + 3 \cdot 25 = 81$ (+1)

Notation (+.5)

(b) $\int_0^4 x\,dx$

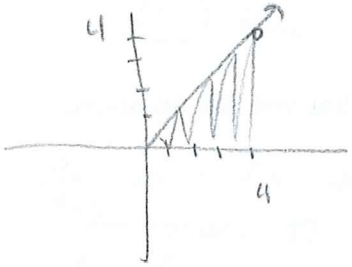
$= \int_0^2 x\,dx + \int_2^4 x\,dx$ (+1)

$= 2 + 6$

$= 8$

Notation (+.5)

02

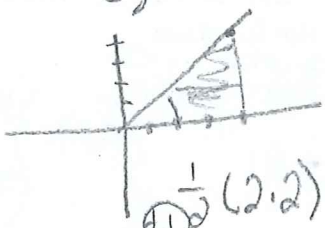


$\frac{1}{2}(4)(4) = 8$

02

$= \int_2^4 x\,dx + \int_2^4 3g(x)\,dx$ (+1.5)

$= \int_2^4 x\,dx + 3\int_2^4 g(x)\,dx$ (+1.5)



(+1) $\frac{1}{2}(2 \cdot 2) + 2 \cdot 2 = 6$

$= 6 + 3 \cdot 25 = 81$