Math 1B (7:30am – 8:20am)
Quiz 2
Fri Oct 2, 2009

SCORE: ___ / 16 POINTS + ___ / 4 POINTS

What month is your birthday ? ___ ___
What are the first 2 digits of your address ? ___ ___
What are the last 2 digits of your zip code ? ___ ___
What are the last 2 digits of your social security number ? ___ ___
[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER, USE YOUR STUDENT ID NUMBER]

To receive full credit, it should be clear how you arrived at all numerical answers

Write as a single integral. Assume that f is continuous. **SCORE: ___ / 2 POINTS**

[a] $\int_2^5 f(x)\,dx + \int_1^2 f(x)\,dx$

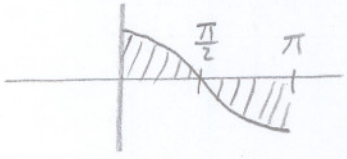
$\int_1^5 f(x)\,dx$ 1

[b] $\int_2^7 f(x)\,dx - \int_5^7 f(x)\,dx$

$\int_2^7 f(x)\,dx + \int_7^5 f(x)\,dx$

$\int_2^5 f(x)\,dx$ 1

Write the area between the graph of $y = \cos x$ and the x-axis on $[0, \pi]$ using integral(s). **SCORE: ___ / 2 POINTS**
DO NOT EVALUATE THE INTEGRAL(S).

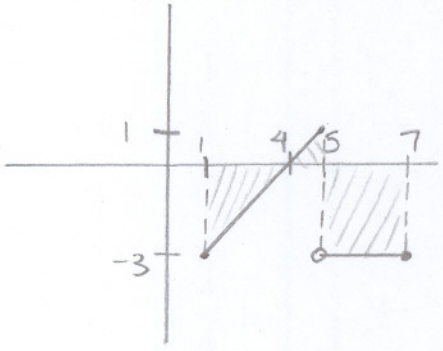


$\int_0^{\frac{\pi}{2}} \cos x\,dx + \left(-\int_{\frac{\pi}{2}}^{\pi} \cos x\,dx\right)$

$= \int_0^{\frac{\pi}{2}} \cos x\,dx - \int_{\frac{\pi}{2}}^{\pi} \cos x\,dx$ 2

OR $\int_0^{\frac{\pi}{2}} \cos x\,dx + \int_{\pi}^{\frac{\pi}{2}} \cos x\,dx$

Use geometry to evaluate $\int_1^7 f(x)\,dx$ if $f(x) = \begin{cases} x-4 & \text{if } x \le 5 \\ -3 & \text{if } x > 5 \end{cases}$. **SCORE: ___ / 4 POINTS**
DO NOT USE ANTI-DERIVATIVES.



$-\frac{1}{2}(3)(3) + \frac{1}{2}(1)(1) - (2)(3)$ 1 1 1

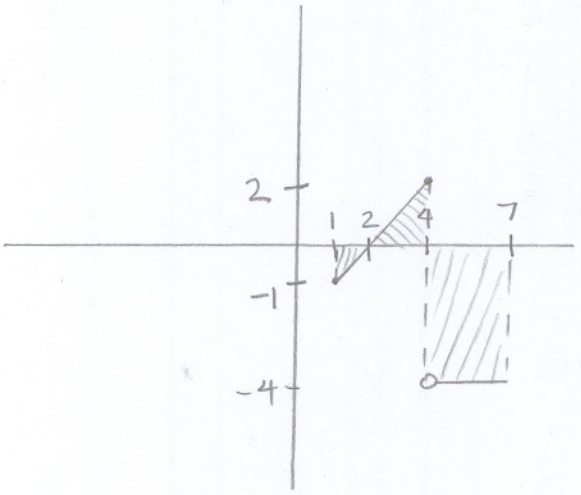
$= -10$ 1

$-\frac{1}{2}$ POINT FOR EACH SIGN (±) ERROR

Use geometry to evaluate $\int_1^7 f(x)\,dx$ if $f(x) = \begin{cases} x-2 & \text{if } x \le 4 \\ -4 & \text{if } x > 4 \end{cases}$.

SCORE: ___ / 4 POINTS

DO NOT USE ANTI-DERIVATIVES.



$-\frac{1}{2}(1)(1) + \frac{1}{2}(2)(2) - (3)(4)$ ₁ ₁ ₁

$= -10\frac{1}{2}$ ₁

$-\frac{1}{2}$ POINT FOR EACH SIGN (±) ERROR

Consider the function values in the table below.

SCORE: ___ / 4 POINTS

x	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0
$f(x)$	2.3	2.7	2.9	2.7	2.1	1.7	1.2	1.5	1.6	1.1	0.6

[a] Estimate $\int_{1.6}^{3.0} f(x)\,dx$ using a right endpoint sum. **[NOTE: READ THE QUESTION CAREFULLY.]**

$(2.1 + 1.7 + 1.2 + 1.5 + 1.6 + 1.1 + 0.6) * 0.2$ ₁ ₁

$= 1.96$ $\frac{1}{2}$

[b] Use your estimate in [a] to approximate the average value of $f(x)$ on $[1.6, 3.0]$.

$\frac{1}{3.0-1.6}\int_{1.6}^{3.0} f(x)\,dx \approx \frac{1}{1.4}(1.96) = 1.4$ ₁ $\frac{1}{2}$