Name:	KEY	Quiz (6.1+6.2) FORM-A	ID: KEY	SEC: 8 9

1	a	b	c	d	e
2	a	b	c	d	e
3	a	b	c	d	e

4	a	b	c	d	e
5	a	b	c	d	e

Circle your answer here. Your mark based on this table

(1) The area of the region in the right half of the plane bounded by the curves $y = x^2$, $y = 2x - 1$, and $y = -x$ is equal to

(a) $\int_0^{1/3}(x^2 - x)dx + \int_{1/3}^1(x^2 + 2x - 1)dx$ (b) $\int_0^1(x^2 - x + 1)dx$ **(c)** $\int_0^{1/3}(x^2 + x)dx + \int_{1/3}^1(x^2 - 2x + 1)dx$

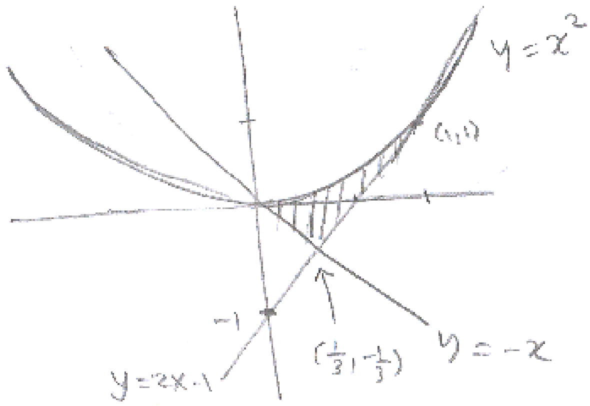
(d) $\int_0^{1/3}(x - x^2)dx + \int_{1/3}^1(x^2 - 2x - 1)dx$ (e) $\int_0^1(x^2 + x - 1)dx$

intersection point: $y = 2x - 1$, $y = -x$

$2x - 1 = -x \Rightarrow 3x = 1 \Rightarrow x = 1/3$

$A = A_1 + A_2$

$= \int_0^{1/3}(x^2 + x)\,dx + \int_{1/3}^1(x^2 - 2x + 1)\,dx$



(2) The area enclosed by the curves $y^2 = 4 - x$, $x + 2y = 1$ is equal to

(a) $\int_{-1}^{3}(3 + 2y - y^2)dy$ (b) $\int_{-3}^{1}(3 - 2y + y^2)dy$ (c) $\int_{-3}^{1}(y^2 - 2y - 3)dy$

(d) $\int_{-1}^{3}(y^2 - 2y - 3)dy$ (e) $\int_{-1}^{3}(3 - 2y + y^2)dy$

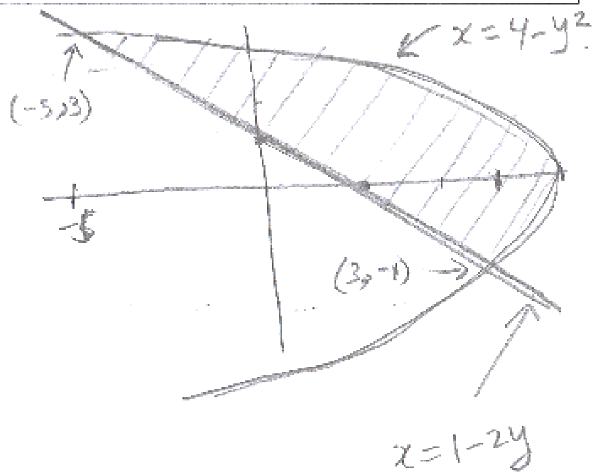
Int. pts: $4 - y^2 = 1 - 2y \Rightarrow y^2 - 2y - 3 = 0$

$(y-3)(y+1) = 0$

$A = \int (x_{Right} - x_{Left})\,dy$

$= \int_{-1}^{3}[(4 - y^2) - (1 - 2y)]\,dy$

$= \int_{-1}^{3}(3 + 2y - y^2)\,dy$



(3) The volume of the solid obtained by rotating the region bounded by the curves $y = 1/x$, $y = 0$, $x = 1$ and $x = 3$ about the line $y = 1$ is

(a) $\pi \int_1^3 \left[1 - (1 + \frac{1}{x})^2\right] dx$ (b) $\pi \int_1^3 \left[1 - (1 - \frac{1}{x})^2\right] dx$ (c) $\pi \int_1^3 \left[2 - (1 + \frac{1}{x})^2\right] dx$

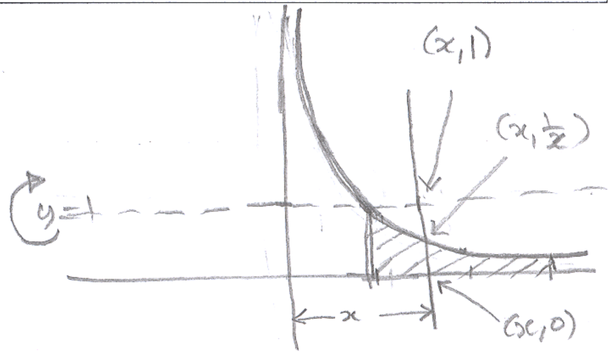
(d) $\pi \int_1^3 \left[2 - (1 - \frac{1}{x})^2\right] dx$ (e) $\pi \int_1^3 \left[1 - (2 + \frac{1}{x})^2\right] dx$

it is a washer.

$r_{out} = (0-1) = 1$

$r_{in} = 1 - \frac{1}{x}$

$V = \pi \int_0^1 \left[1 - (1 - \frac{1}{x})^2\right] dx$



(4) The base of a solid is the region bounded by the curves $y = \sqrt{x}$, $y = 0$, $x = 1$ and $x = 2$ if the cross-sections of the solid perpendicular to the x-axis are squares with one side lying along the base, the volume of the solid is

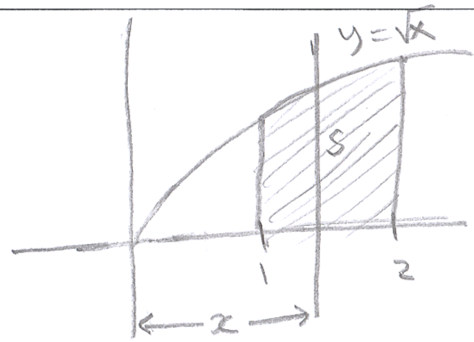
(a) $3/2$ (b) $1/2$ (c) $5/2$

(d) $7/2$ (e) $9/2$

side of the square $= s = \sqrt{x}$

$\int_1^2 (\sqrt{x})^2 dx = \int_1^2 x\, dx = \frac{1}{2} x^2 \Big]_1^2$

$= \frac{1}{2}[4 - 1] = \frac{3}{2}$



(5) The volume of the solid obtained by rotating the region bounded by the curves $y = x^3$, $y = 1$ and $x = 0$ about the line $x = -2$ is

(a) $\pi \int_{-2}^1 \left[(2 + \sqrt[3]{y})^2 - 4\right] dy$ (b) $\pi \int_0^1 \left[(2 + \sqrt[3]{y})^2 - 4\right] dy$ (c) $\pi \int_0^1 \left[(3 + \sqrt[3]{y})^2 - 9\right] dy$

(d) $\pi \int_{-3}^1 \left[(3 + \sqrt[3]{y})^2 - 9\right] dy$ (e) $\pi \int_0^1 \left[(2 - \sqrt[3]{y})^2 - 4\right] dy$

washer;

$r_{out} = \sqrt[3]{y} + 2$, $r_{in} = 2$

$V = \pi \int_0^1 \left[(\sqrt[3]{y} + 2)^2 - 4\right] dy$