① $f(x) = \sqrt{x}$ $g(x) = 0$ $x = 9$

$\frac{s^2\sqrt{3}}{4}$

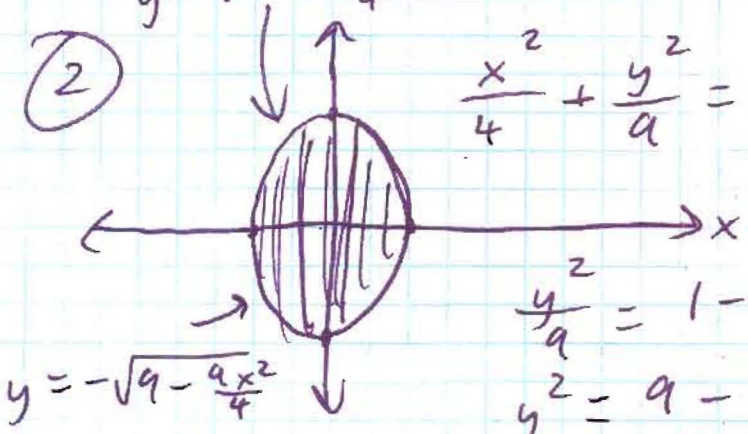
$\frac{\pi}{8}D^2$

ⓐ $\int_0^9 (\sqrt{x})^2 dx = \frac{81}{2}$

ⓑ $\frac{\sqrt{3}}{4}\int_0^9 (\sqrt{x})^2 dx = \frac{81\sqrt{3}}{8}$

ⓒ $\frac{\pi}{8}\int_0^9 (\sqrt{x})^2 dx = \frac{81\pi}{16}$

② $y = \sqrt{9 - \frac{9x^2}{4}}$



$y = -\sqrt{9 - \frac{9x^2}{4}}$

$\frac{x^2}{4} + \frac{y^2}{9} = 1$

$\frac{y^2}{9} = 1 - \frac{x^2}{4}$

$y^2 = 9 - \frac{9x^2}{4}$

$y = \pm\sqrt{9 - \frac{9x^2}{4}}$

ⓐ $\int_{-2}^{2} \left(\sqrt{9 - \frac{9x^2}{4}} + \sqrt{9 - \frac{9x^2}{4}}\right)^2 dx$

$\int_{-2}^{2} \left(2\sqrt{9 - \frac{9x^2}{4}}\right)^2 dx$

$\int_{-2}^{2} 4\left(9 - \frac{9x^2}{4}\right) dx$

$\int_{-2}^{2} 36 - 9x^2 dx$

$\left[36x - 3x^3\right]_{-2}^{2} =$

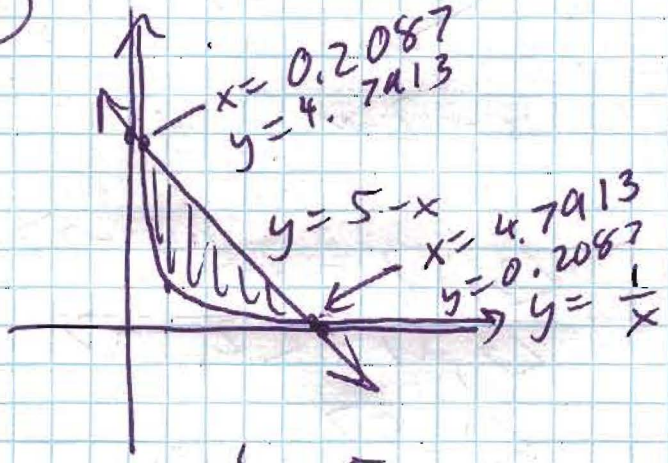
$\left[(72 - 24) - (-72 + 24)\right]$

96

ⓑ $\frac{\sqrt{3}}{4}(96) = 24\sqrt{3}$

ⓒ 12π

(3)



$\frac{1}{x} = 5 - x$

$1 = 5x - x^2$

$y = 5 - x$ $\quad$ $y = \frac{1}{x}$

$x = 5 - y$ $\quad$ $x = \frac{1}{y}$

(a) $\int_{0.2087}^{4.7913} \left(5 - x - \frac{1}{x}\right) dx$

≈ 8.323

(b) $\pi \int_{0.2087}^{4.7913} \left((5-x)^2 - \left(\frac{1}{x}\right)^2\right) dx$

≈ 100.776

(c) $\pi \int_{0.2087}^{4.7913} \left[(5-y)^2 - \left(\frac{1}{y}\right)^2\right] dy$

≈ 100.776

(d) $\frac{\sqrt{3}}{4} \int_{0.2087}^{4.7913} \left(5 - x - \frac{1}{x}\right)^2 dx \approx 8.2586$