

$$a = .82413231$$

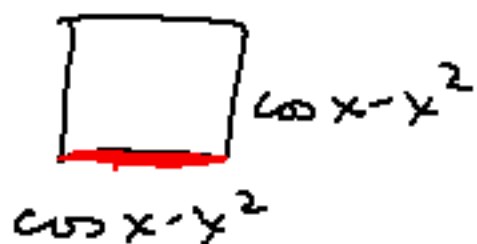
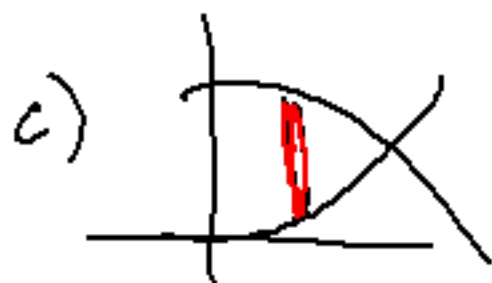
$$a) \int_0^a \cos x - x^2 dx = .547$$

$$b) x\text{-axis: } \pi \int_0^a (\cos x)^2 - (x^2)^2 dx = .585 \pi$$

$$y\text{-axis: } \pi \int_0^a 2x(\cos x - x^2) dx = .337 \pi$$

$$* y=3: \pi \int_0^a (x^2-3)^2 - (\cos x-3)^2 dx = 2.699 \pi$$

$$* x=3: \pi \int_0^a 2(3-x)(\cos x - x^2) dx = 2.947 \pi$$

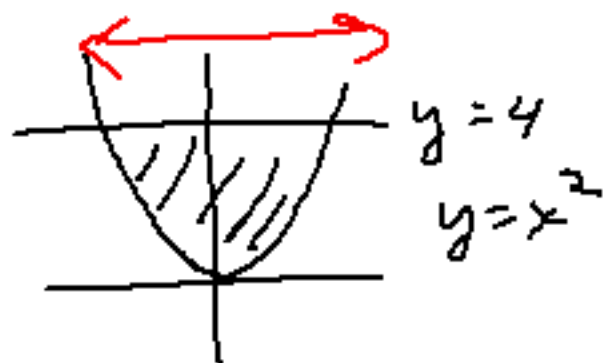


$$A = (\cos x - x^2)^2$$



$$\int_0^a (\cos x - x^2)^2 = .437$$

1999
#2



4.37

$$a) \int_{-2}^2 (4 - x^2) dx = 10.666$$

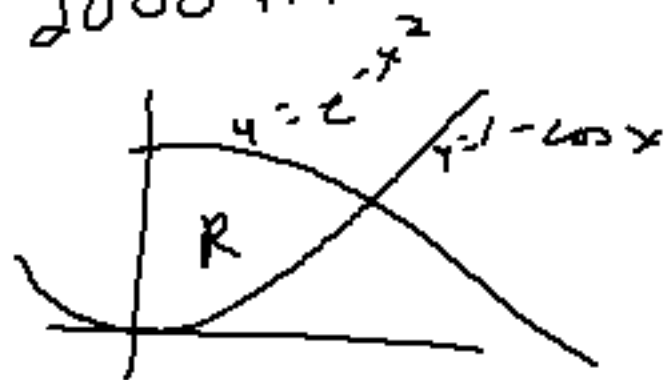
≈ 10.667

$$b) \pi \int_{-2}^2 (4^2 - (x^2)^2) dx = 51.2\pi$$

$\approx 160.849 \approx 160.850$

$$c) \pi \int_{-2}^2 (x^2 - k)^2 - (4 - k)^2 dx = 51.2\pi$$

2000 #1



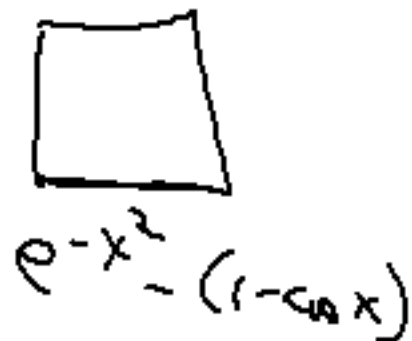
$$a = .941944$$

4.84

a) Area $\int_0^a e^{-x^2} - (1 - \cos x) dx = .590$
 $= .591$

b) V about x-axis $\pi \int_0^a (e^{-x^2})^2 - (1 - \cos x)^2 dx$

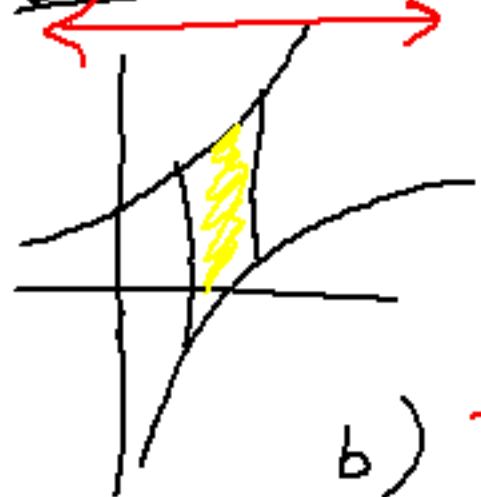
c) cross sect Square $= .555\pi$ or $.556\pi$
 ≈ 1.746 or 1.747



$$\int_0^a (e^{-x^2} - (1 - \cos(x)))^2 dx = .461$$



2002 #1



4.08

a) $\int_{1/2}^1 e^x - \ln x \, dx = 1.222$
 ≈ 1.223

b) $\pi \int_{1/2}^1 (\ln x - 4)^2 - (e^x - 4)^2 \, dx$
 $= 7.515 \pi \approx 23.609$

c) $h = e^x - \ln x$
 $h' = e^x - \frac{1}{x} = 0$

$x = .567143$

$h(.567143) = 2.330$

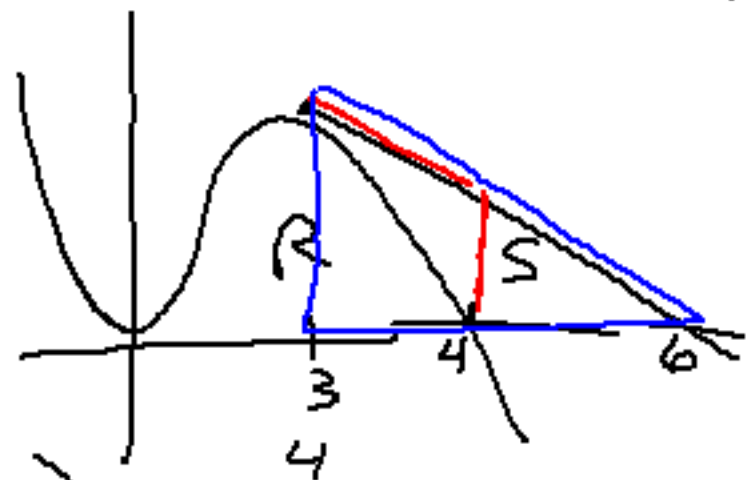
$h(1/2) = 2.3418$

$h(1) = 2.718$

abs max value is 2.718

abs min value is 2.330

20003B



$$\begin{aligned} \text{c) } \pi \int_0^4 (4x^2 - x^3)^2 - 0^2 dx \\ = 156.038\pi \\ \approx 490.208 \end{aligned}$$

$$\begin{aligned} \text{b) } \int_3^4 (18 - 3x - (4x^2 - x^3)) dx \\ \int_4^6 (18 - 3x - 0) dx \end{aligned} \quad \left. \vphantom{\int_3^4} \right\} \begin{aligned} & 7.916 \\ & \approx 7.917 \end{aligned}$$