Set 7 Answers (For #2b and 3b, the 'n' is a strange looking 'pi')

1)

a) ln2
b) $k = \sqrt{2}$
c) $\frac{1}{\sqrt{6}}\ln 2$

2)

a	13/6
b	(158/15)π

3)

a	ln 2
b	π[(√3)-(π/3)]

4)

a	$\frac{\pi}{4} - \frac{1}{2}$
b	$\pi\int_0^{\frac{\pi}{4}} \left(\frac{\sec^4 x}{4} - \tan^4 x\right)dx$

5)

a	$\frac{64\pi}{3}$
b	$\pi\int_0^4 \left[y^2 - \left(\frac{y^4}{64}\right)^2\right]dy$

6)

a	$e - \frac{4}{3}$
b	$\pi\left(\frac{e^2}{2} - \frac{7}{10}\right)$
c	$V = \pi\int_0^1 \left[1 - \left(1 - \sqrt{y}\right)^2\right]dy + \pi\int_1^e 1 - (\ln y)^2\, dy$

7)

a	$\left(\frac{2}{3} + \frac{2}{\pi}\right)$
b	$\pi\int_0^1 [1 + \sin(\pi x)]^2\, dx$
c	$V = \pi\int_0^1 y\, dy + \pi\int_1^2 \left[\left(1 - \frac{1}{\pi}\arcsin(y-1)\right)^2 - \left(\frac{1}{\pi}\arcsin(y-1)\right)^2\right]dy$

8)

a	2
b	$\frac{25}{4}$
c	$\ln\frac{9}{4}$

9)

a) 3.214 or 3.215
b) 31.884 or 31.885
c) 8.997

10)

a	(2,4) (4,16 (-0.767, 0.588) or (-0.766, 0.588)
b	$\int_0^{0.588} 2\sqrt{y}\,dy + \int_{0.588}^4 \left(\sqrt{y} - \frac{\ln y}{\ln 2}\right)dy + \int_4^{16}\left(\frac{\ln y}{\ln 2} - \sqrt{y}\right)dy$ $\int_{-0.767}^2 (2^x - x^2)dx + \int_2^4 (x^2 - 2^x)dx$
c	$\int_{-0.767}^2 \left((5 - x^2)^2 - (5 - 2^x)^2\right)dx$

11)

a	18
b	212.057 or 212.058
c	407.150

12)

a. 1.296
b. 3.233
c. $\pi\int_0^{\ln 3} \left(e^y - 3\right)^2 dy$