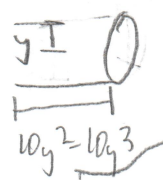


1 $A = s^2$
 $s = 1 - (x^{\frac{1}{3}} - 1)$
 $V = \int_0^8 (1 - (x^{\frac{1}{3}} - 1))^2 dx$
 $= 3.2$

$1 = x^{\frac{1}{3}} - 1$
 $2 = x^{\frac{1}{3}} \quad x = 8$

4 int wrt y

 $r = y$
 $h = 10y^2 - 10y^3$
 $V = 2\pi \int_0^1 (y)(10y^2 - 10y^3) dy$
 $= 3.142$

2 $A = \pi r^2$
 $r = (e^x) - (-2)$
 $V = \int_0^2 (\pi (e^x + 2)^2) dx$
 $= 189.612$

5 $\frac{dx}{dy} = \frac{3}{2} \left(\frac{2}{3} \right) (1) (y-1)^{\frac{1}{2}}$
 $= \sqrt{y-1}$
 $\int_1^4 \sqrt{1 + (y-1)^2} dy = \int_1^4 \sqrt{1+y-1} dy$
 $= \int_1^4 \sqrt{y} dy = \left[\frac{2}{3} y^{\frac{3}{2}} \right]_1^4 = \frac{14}{3}$

3 $\sqrt{x} = \frac{1}{3}x$
 $3\sqrt{x} = x$
 $3 = \sqrt{x}$
 $x = 9$
 $x = 0$
 $V = \pi \int_0^9 ((6 - \frac{1}{3}x)^2 - (6 - \sqrt{x})^2) dx$
 $= 127.235$

$A = \pi(R^2 - r^2)$
 $R = 6 - \frac{1}{3}x$
 $r = 6 - \sqrt{x}$

6 $\frac{dy}{dx} = 2e^x - 2e^{-x}$
 $\int_{-4}^4 \sqrt{1 + (2e^x - 2e^{-x})^2} dx$
 $= 211.279$