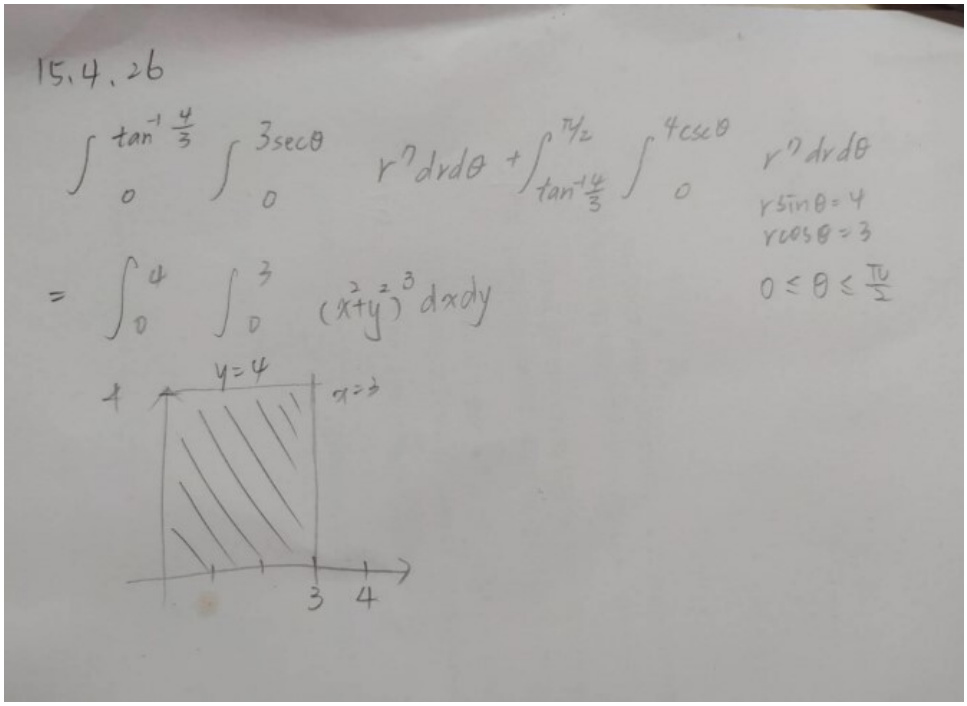
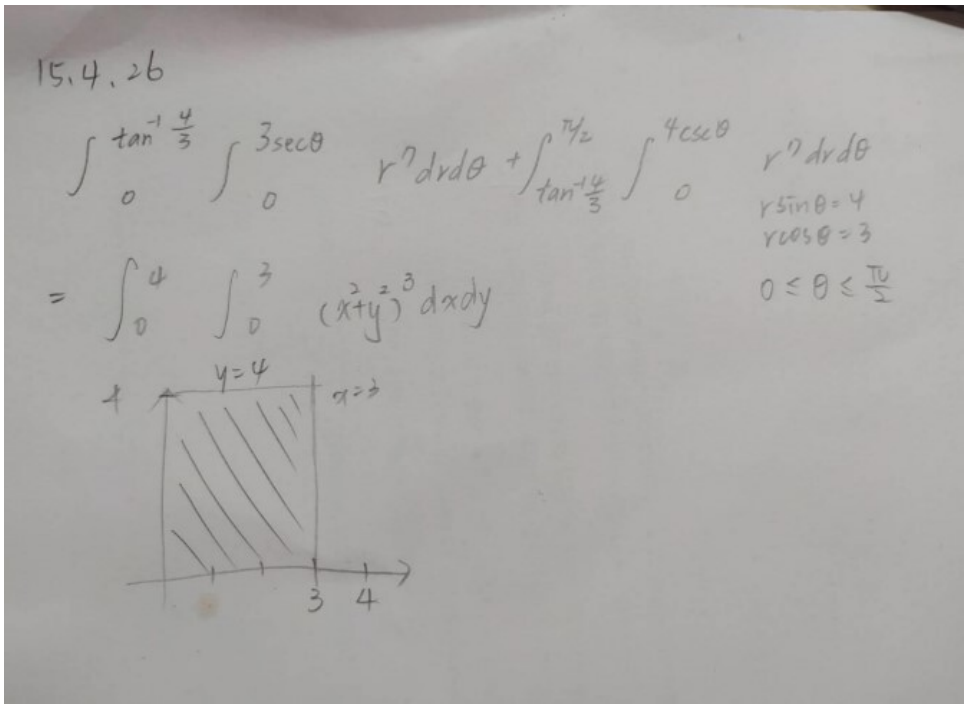
Brief solutions to selected problems in homework week 12

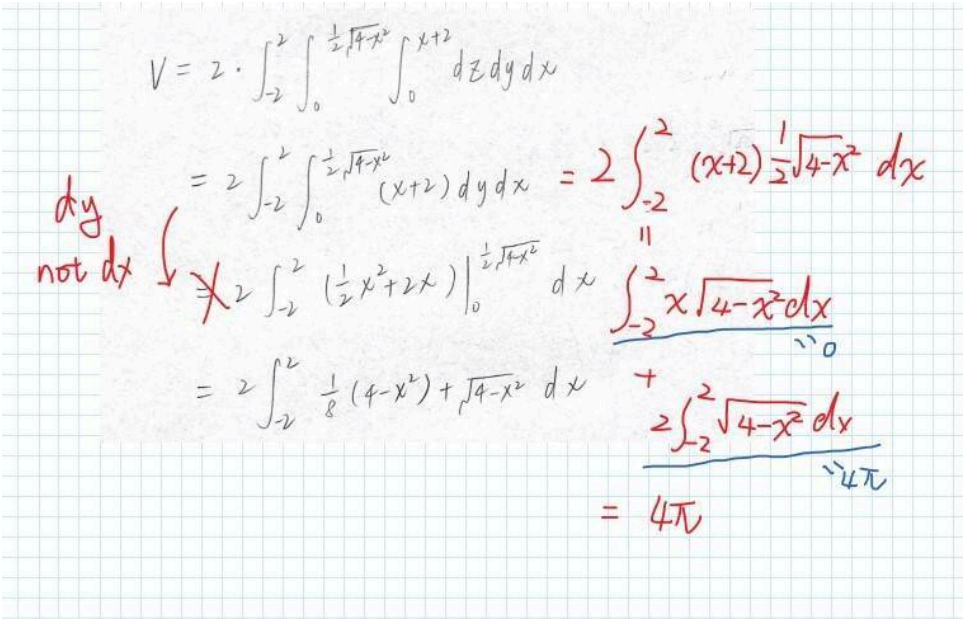
1. Section 15.4, problem 26:



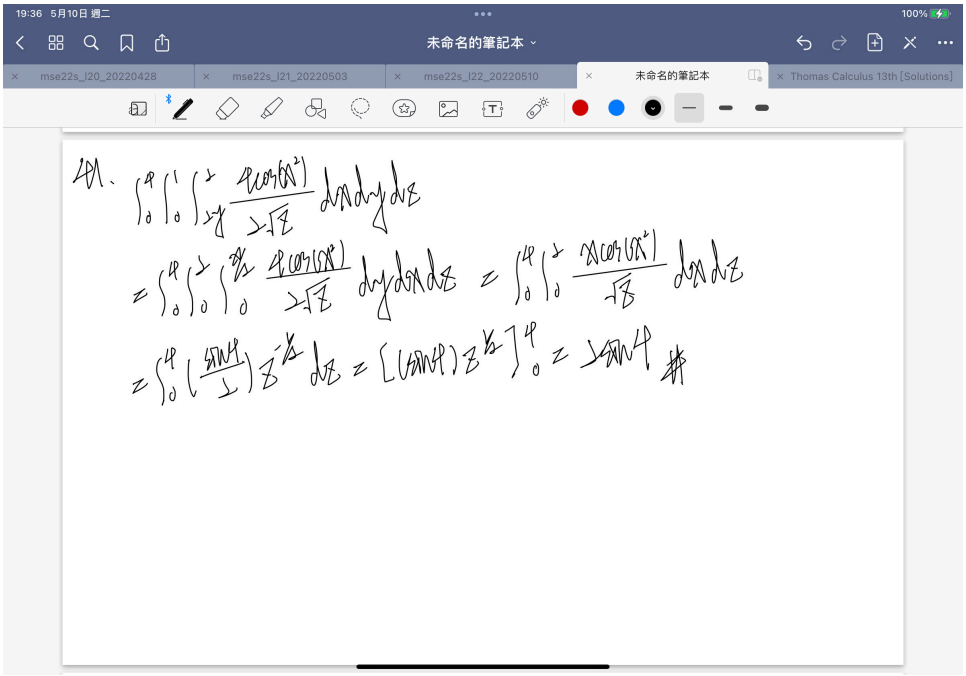
2. Section 15.4, problem 42:



3. Section 15.5, problem 35:



4. Section 15.5, problem 41:



5. Section 15.5, problem 43:

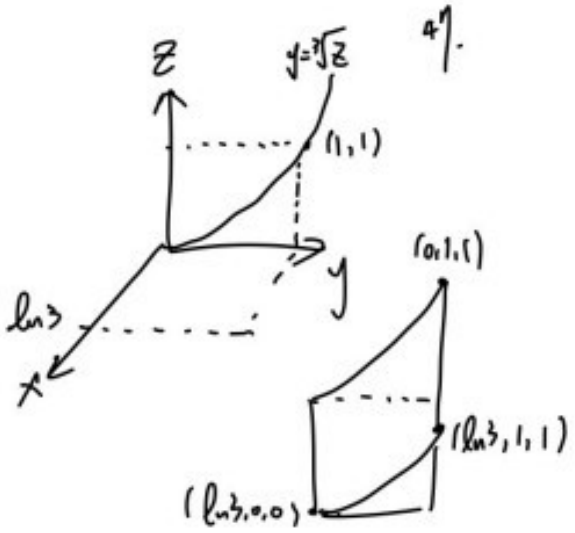
43. $x = \ln 3$

$x = 0$

$y = 1$

$y = \sqrt[3]{z} \Rightarrow y^3 = z$

$z = 1, \ z = 0$



47.

$$\int_0^1 \int_0^{\ln 3} \int_0^{y^3} \frac{z e^{2x} \sin z y^2}{y^2} \, dz \, dx \, dy$$

$$= \int_0^1 \int_0^{\ln 3} z e^{2x} \sin(z y^2) y \, dx \, dy$$

$$= \int_0^1 \frac{z}{z} y \sin(z y^2) e^{2x} \Big|_0^{\ln 3} \, dy$$

$$= \int_0^1 \frac{z}{z} y \sin(z y^2)(9 - 1) \, dy$$

$$= \frac{8}{z} z \int_0^1 y \sin(z y^2) \, dy = \frac{8z}{z} \frac{1}{2z} \cos(z y^2) \Big|_0^1$$

$$= -2(\cos z - \cos 0) = 4$$