3. $D = \{0 \le x \le 1, 0 \le y \le 1 - x^2\} = \{0 \le y \le 1, 0 \le x \le \sqrt{1-y}\}$

$\int_0^1 \int_0^{1-x^2} xy\, dy\, dx = \int_0^1 \int_0^{\sqrt{1-y}} xy\, dx\, dy = \frac{1}{12}$

5. A) $\int_0^4 \int_{2-\frac{x}{2}}^2 x^2 y\, dy\, dx = \frac{192}{5}$

6. B) $\int_0^4 \int_{\frac{x}{2}}^2 x^2 y\, dy\, dx = \frac{256}{15}$

7. C) $\int_0^2 \int_0^x x^2 y\, dy\, dx + \int_2^4 \int_0^2 x^2 y\, dy\, dx = \frac{608}{15}$

11. $\int_1^2 \int_0^{\sqrt{4-x^2}} \frac{y}{x}\, dy\, dx = \ln(4) - \frac{3}{4}$

19. $\int_0^1 \int_1^{e^{x^2}} x\, dy\, dx = \frac{e-2}{2}$

21. $\int_0^1 \int_{y^2}^y 2xy\, dx\, dy = \frac{1}{12}$

25. $\int_0^4 \int_0^y f(x,y)\, dx\, dy$

31. $\int_1^e \int_{(\ln(y))^2}^{\ln(y)} \frac{1}{\ln(y)}\, dx\, dy = e - 2$

33. $\int_0^1 \int_0^x \frac{\sin x}{x}\, dy\, dx = 1 - \cos 1$

35. $\int_0^1 \int_0^y xe^{y^3}\, dx\, dy = \frac{e-1}{6}$

37. $\int_0^1 \int_1^2 e^{x+y}\, dy\, dx + \int_1^2 \int_0^2 e^{x+y}\, dy\, dx = e^4 - 3e^2 + 2e$

43. $\int_1^2 \int_y^{2y} \frac{\sin y}{y}\, dx\, dy = \cos 2 - \cos 1$

49. $\int_{-2}^2 \int_{-\sqrt{4-x^2}}^{\sqrt{4-x^2}} (8 - 2x^2 - 2y^2)\, dy\, dx$