Form B

1. $$\iint_D (x+4y)\,dA = \int_0^{\pi}\int_2^3 r^2(\cos\theta + 4\sin\theta)\,dr\,d\theta$$

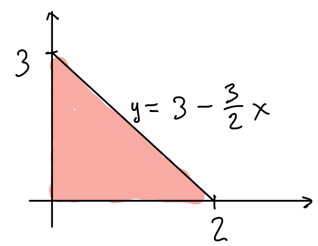
$$= \int_0^{\pi}(\cos\theta + 4\sin\theta)\int_2^3 r^2\,dr\,d\theta$$

$$= \frac{1}{3}\left[r^3\right]_2^3 \int_0^{\pi}(\cos\theta + 4\sin\theta)\,d\theta$$

$$= \frac{19}{3}\int_0^{\pi}(\cos\theta + 4\sin\theta)\,d\theta = \frac{19}{3}\left[\sin\theta - 4\cos\theta\right]_0^{\pi}$$

$$= \frac{19}{3}\left[(0+4)-(0-4)\right] = \boxed{\frac{152}{3}}$$

2. $$\int_0^2\int_0^{3-\frac{3}{2}x} 5x^3\,dy\,dx = 5\int_0^2\left(3x^3 - \frac{3}{2}x^4\right)dx$$



$$= 5\left[\frac{3}{4}x^4 - \frac{3}{10}x^5\right]_0^2$$

$$= 5\left(12 - \frac{96}{10}\right) = 5\left(\frac{120-96}{10}\right)$$

$$= \frac{(24)(5)}{10} = 12$$

3. $$\int_6^{11}\int_0^3\int_{x^2}^9 f(x,y,z)\,dy\,dx\,dz$$