

$$1) \int_{-2}^2 x^2 dx$$

$$\int x^2 dx$$

$$\frac{x^{2+1}}{2+1} = \frac{x^3}{3}$$

$$\frac{x^3}{3} \Big|_{-2}^2 = \frac{2^3}{3} - \frac{(-2)^3}{3} = \frac{8}{3} - \left(-\frac{8}{3}\right)$$

$$2) \int_0^3 (2x^2 + 3) dx$$

$$\int 2x^2 + 3 dx$$

$$\int 2x^2 dx + \int 3 dx$$

$$\frac{2x^3}{3} + 3x$$

$$\left(\frac{2x^3}{3} + 3x\right)$$

$$\Big|_0^3$$

$$\frac{2 \times 3^3}{3} + 3 \times 3 - \left(\frac{2 \times 0^3}{3} + 3 \times 0\right) = 27$$

$$3) \int_0^1 x^4 (x^2 - x) dx$$

$$\int x^4 (x^2 - x) dx = x^4 \cdot x^2 - x^4 \cdot x$$

$$= x^6 - x^5 dx$$

$$\int x^6 dx - \int x^5 dx$$

$$\frac{x^{6+1}}{6+1} - \frac{x^{5+1}}{5+1} = \frac{x^7}{7} - \frac{x^6}{6}$$

$$\frac{x^7}{7} - \frac{x^6}{6} \Big|_0^1$$

$$\frac{x^6}{6} - \frac{x^9}{9} \Big|_3^6$$

$$\frac{3^6}{6} - \frac{6^6}{6} - \left(\frac{(-3)^9}{9} - \frac{(-3)^6}{6} \right) = 0$$

$$1) f(x) = 2x + 9$$

$$g(x) = x + 8$$

Resolvi em primeira base

$$\int_0^2 2x + 9 \, dx$$

$$\frac{2x^2}{2} + 9x \Big|_0^2$$

$$4 + 18 = 22$$

$$\int_0^2 f(x) \, dx = 22$$

$$2) \int_0^8 g(x) \, dx$$

$$\int_0^8 (x + 8) \, dx$$

$$\frac{x^2}{2} + 8x \Big|_0^8$$

$$\left(\frac{128}{2} + 8(8) \right) - \left(\frac{0^2}{2} + 8(0) \right)$$

$$168 - 0 = 168$$

$$\int_0^8 g(x) \, dx = 168$$

$$6) \int_2^6 \left(\frac{x^2}{4} + 8 \right) dx$$

$$\int_2^6 f(x) - g(x) \, dx$$

$$\int_2^6 \left[9 - \frac{x^2}{2} \right] - (6 - x) \, dx = \int_2^6 \left[3 - \frac{x^2}{2} + x \right] dx$$

$$= \left[3x - \frac{x^3}{6} + \frac{x^2}{2} \right] \Big|_2^6 = \frac{59}{2}$$