Procedimiento

1. $\int_{-2}^{2} x^2 \, dx$

$\int x^2 \, dx$

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

$\frac{x^3}{3}\Big|_{-2}^{2} \quad \frac{2^3}{3} - \frac{(-2)^3}{3} = \frac{16}{3}$

2. $\int_{-3}^{3} (2x^2 + 3)\,dx$

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

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

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

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

$\frac{2 \times 3^3}{3} + 3 \times 3 - \left(\frac{2 \times (-3)^3}{3} + 3 \times (-3)\right) = 54$

3. $\int$

3. $\int_{-3}^{3} x^4 \, (x^3 - x) \, dx$

$\int x^4 (x^3 - x) \, dx \rightarrow x^4 \cdot x^3 - x^4 \cdot x$

$\rightarrow x^7 - x^5$

$\int x^7 - x^5 \, dx$

$\int x^7 \, dx - \int x^5 \, dx$

$\int x^7 \, dx \rightarrow \frac{x^{7+1}}{7+1} = \frac{x^8}{8}$

$\frac{x^8}{8} - \int x^5 \, dx$

$-\int x^5 \, dx = -\frac{x^{5+1}}{5+1}$

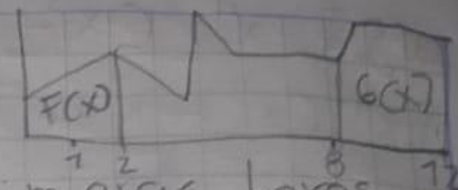
$= -\frac{x^6}{6}$

$\left(\frac{x^8}{8} - \frac{x^6}{6}\right)\Big|_{-3}^{3}$

$\frac{3^8}{8} - \frac{3^6}{6} - \left(\frac{(-3)^8}{8} - \frac{(-3)^6}{6}\right) = 0$

4. $F(x) = 2x + 4$

$G(x) = x + 8$



a. posición en sus primeras horas

$\int_0^2 2x+4\,dx$

$\frac{2x^2}{2} + 4x \Big|_0^2$

$4 + 8 = 12$

$\int_0^2 F(x)\,dx = 12$

5. En las ultimas cuatro horas

$\int_8^{12} G(x)\,dx$

$\int_8^{12} (x+8)\,dx$

$\frac{x^2}{2} + 8x \Big|_8^{12}$

$\left(\frac{12^2}{2} + 8(12)\right) - \left(\frac{(8)^2}{2} + 8(8)\right)$

$168 - 96$

$\int_8^{12} G(x)\,dx = 72$

6. $\int_{-2}^{6} -\frac{x^2}{4} + x + 3\,dx$

$\int_{b}^{a} f(x) - g(x)\,dx$

$= \int_{-2}^{6} \left[9 - \left(\frac{x}{2}\right)^2 - (6 - x)\right] dx = \int_{-2}^{6} \left[3 - \frac{x^2}{4} + x\right] dx$

$= \left[3x - \frac{x^3}{12} + \frac{x^2}{2}\right]\Big|_{-2}^{6} = \frac{64}{3}$