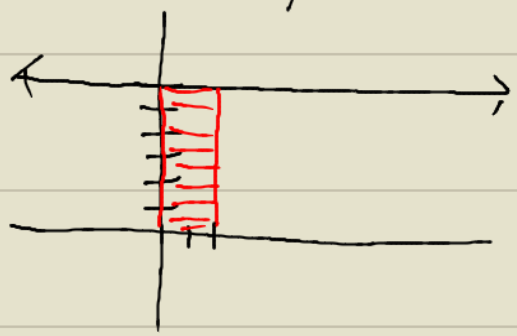
FUNDAMENTAL THEOREM OF CALCULUS

$$\int_a^b f(x)\,dx = F(b) - F(a)$$

WHERE $F'(x) = f(x)$

1. $y = 6$



AREA $= LW$

$= 6(2)$

$= \boxed{12}$

2. $y = \frac{x}{4}$

$A = \frac{1}{2}BH$

$A = \frac{1}{2}(4)(1)$

$A = \boxed{2}$

3. $\int_{-2}^{2} (4 - x^2)\,dx$

$= \left[4x - \frac{1}{3}x^3\right]_{-2}^{2}$

$= \left(4(2) - \frac{1}{3}(2)^3\right) - \left(4(-2) - \frac{1}{3}(-2)^3\right)$

$x = 2$ $\qquad$ $x = -2$

$= \left(8 - \frac{8}{3}\right) - \left(-8 + \frac{8}{3}\right)$

$= 8 - \frac{8}{3} + 8 - \frac{8}{3}$

$= 16 - \frac{16}{3}$

$= \boxed{\frac{32}{3}}$