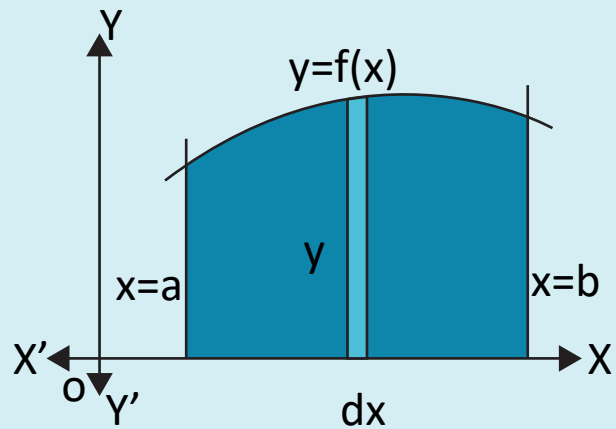# Applications of integrations

Area under simple curves
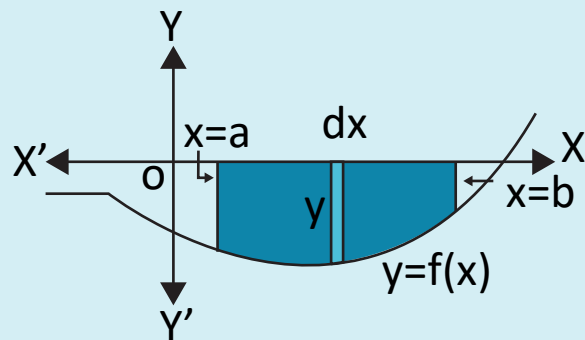
Type 1. Area bounded by x-axis , x=a, x=b and y=f(x) where a<b and y>0
in [a,b]

$$A = \int_a^b y\,dx = \int_a^b f(x)\,dx$$
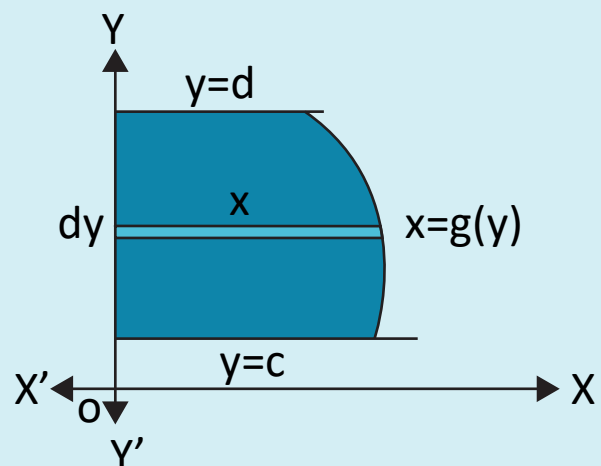
Type 2. Area bounded by x-axis , x=a, x=b and y=f(x) where a<b and y<0
in [a,b]

$$A = \left| \int_a^b y\,dx \right| = \left| \int_a^b f(x)\,dx \right|$$

Type 3. Area bounded by y-axis , y=c, y=d and x=g(y) where c<d and x>0
in [c,d]

$$A = \int_c^d x\,dy = \int_c^d g(y)\,dy$$

Type 4. Area bounded by y-axis , y=c, y=d and x=g(y) where c<d and x<0
in [c,d]