15. $\frac{dC}{dx} = \frac{1}{5}x^{\frac{1}{3}}$

$C = \int \frac{dC}{dx}$

$= \int \frac{1}{5}x^{\frac{1}{3}}\,dx$

$C = \frac{1}{5} \cdot \frac{x^{\frac{1}{3}+1}}{\frac{1}{3}+1} + c$

$C = \frac{1}{5} \cdot \frac{x^{4/3}}{\frac{4}{3}} + c$

$C = \frac{1}{5} \cdot \frac{3}{4}x^{4/3} + c$

$C = \frac{3}{20}x^{4/3} + c$

$1000 = \frac{3}{20}(0)^{4/3} + c$

$1000 = c$

$C = \frac{3}{20}x^{4/3} + 1000$

RECALL $R = xp$

16. $\frac{dR}{dx} = 400 - 2x$

$R = \int \frac{dR}{dx}$

$R = \int (400 - 2x)\,dx$

$R = 400x - \frac{2x^2}{2} + c$

$R = 400x - x^2 + c$

$0 = 400(0) - 0^2 + c$

$0 = c$

so

$R = 400x - x^2$

so

$R = xp$

$400x - x^2 = xp$

$\frac{400x - x^2}{x} = \frac{xp}{x}$

$400 - x = p$