7. $C(t) = \dfrac{0.02t}{(t+3)^2}$ $\quad P \quad P' = 0.02$

$Q \quad Q' = 2(t+3)^1 \cdot \frac{d}{dt}(t+3)$

$= 2(t+3)$

MAXIMIZE $C(t)$

$\dfrac{P'Q - PQ'}{Q^2}$

$$C'(t) = \frac{0.02(t+3)^2 - 0.02t(2(t+3))}{[(t+3)^2]^2}$$

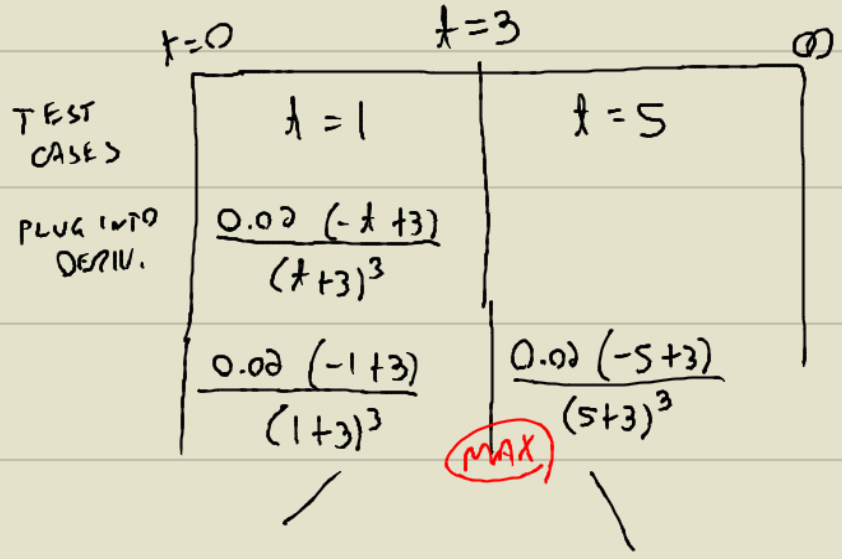
$$= \frac{0.02(t+3)[t+3-2t]}{(t+3)^4}$$

$$= \frac{0.02(-t+3)}{(t+3)^3}$$

$0.02(-t+3) = 0$ $\qquad (t+3)^3 = 0$

$-t+3 = 0$ $\qquad t+3 = 0$

$3 = t$ $\qquad$ ~~$t = -3$~~



SO

MAX CONCENTRATION OCCURS AT $t = 3$ HOURS