

$$7. \quad C(t) = \frac{0.02t}{(t+3)^2} \quad \begin{matrix} P \\ Q \end{matrix} \quad \begin{matrix} P' = 0.02 \\ Q' = 2(t+3)' \cdot \frac{d}{dt}(t+3) \\ = 2(t+3) \end{matrix}$$

MAXIMIZE  $C(t)$

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

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

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

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

$$\begin{matrix} 0.02(-t+3) = 0 & (t+3)^3 = 0 \\ -t+3 = 0 & t+3 = 0 \\ 3 = t & t = -3 \end{matrix}$$

	$t=0$	$t=3$	$t=0$
TEST CASES	$t=1$	$t=5$	
PLUG INTO DERIV.	$\frac{0.02(-1+3)}{(1+3)^3}$	$\frac{0.02(-5+3)}{(5+3)^3}$	
	/	(MAX)	/

SO  
 MAX CONCENTRATION OCCURS AT  $t=3$  HOURS