PROBLEM 5.2

GIVEN:

$V_T = 1000 \frac{FT}{SEC}$

$V_M = 3000 \frac{FT}{SEC}$

$Y_T = 20,000$ FT
↳ CONSTANT

$\theta_T = 0$

$\beta(0) = 90°$

FIND:

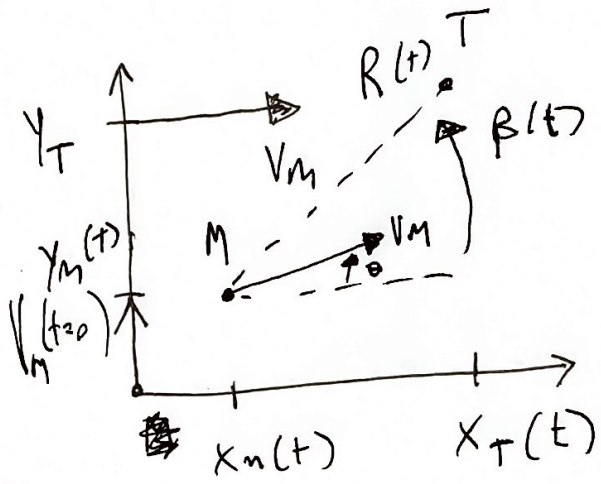
(1) TRAJECTORIES OF TARGET AND MISSILE

(2) TIME OF IMPACT

SOLUTION: TYPO IN BOOK!

$$\dot{R} = V_T \cos\beta - V_M$$

$$\dot{\beta} = -\frac{V_T \sin\beta}{R}$$



THEN WE HAVE,

$$X_T(t) = \int_0^t V_T \, dt = V_T t$$

$$= \frac{1000 ft}{SEC} t$$

$Y_T = 20,000 ft$

FOR THE MISSILE, RELATIVE TO TARGET IN GLOBAL FRAME:

$$X_M(t) = X_T(t) - R(t)\cos(\beta(t))$$

$$Y_M(t) = Y_T - R(t)\sin(\beta(t))$$

// NEED TO FIND $R(t)$ & $\beta(t)$

↳ REST OF PROBLEM DONE ON COMPUTER!