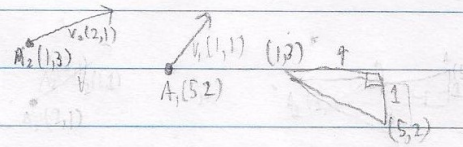
Anthony Goh 4-4-16

CISC 3665

Lab III. 2: Chasing and Evading Lab

Part 1:

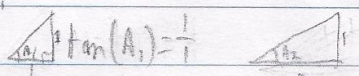
1.1



$D^2 = 4^2 + 1^2$

$D^2 = 16+1$

$D = \sqrt{17} \approx 4.1231$



$\tan(A_1) = \frac{1}{1}$ $A_1 = 45°$

$\tan(A_2) = \frac{1}{2}$ $A_2 \approx 26.5650°$

$\theta = 180-(180-A_1)-A_2$

$\theta = 180-(180-45)-26.5650$

$\theta \approx 18.4349°$

1.2. $2x_1+1 = x_1+5$ $(1\cdot4)+2 = 6 = A_{x_2}$ at time 4 $2\cdot4+1=9$

$x_1 = 4$ $(2\cdot4)+3 = 7 = A_{x_2}$ at time 4 $4+5=9$

Time of interaction = 4 sec., $x = 9$.

The two agents will cross at $X=9$, where they are at: $A_1 = (9,6)$ and $A_2 = (9,7)$. This means that they will not reach the same point at the same time, as their Y positions are different, while having the same velocities in the Y direction. This ensures that they will never meet at the same time regardless of how they cross.