

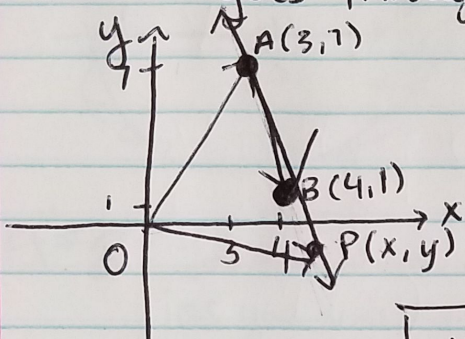
6.3 (Part 2)

Parameterization of a line \rightarrow vector

" " " line segment \rightarrow vector & endpoints ^{find}

" " " circle \rightarrow move unit circle around

Ex #5 Find parameterization of the line that goes through $A(3, 7)$ & $B(4, 1)$ -

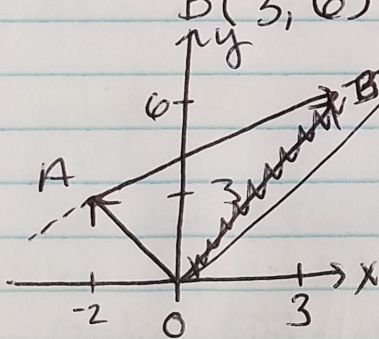


$$\begin{aligned}\vec{OP} &= \vec{OA} + t\vec{AB} \\ &= \langle 3, 7 \rangle + t\langle 4-3, 1-7 \rangle \\ &= \langle 3, 7 \rangle + \langle 1t, -6t \rangle\end{aligned}$$

$$\vec{OP} = \langle t+3, 7-6t \rangle$$

$$\begin{aligned}x &= t+3 \\ y &= 7-6t\end{aligned}$$

Ex #6 Find the parameterization for the segment w/ endpoints $A(-2, 3)$ & $B(3, 6)$.



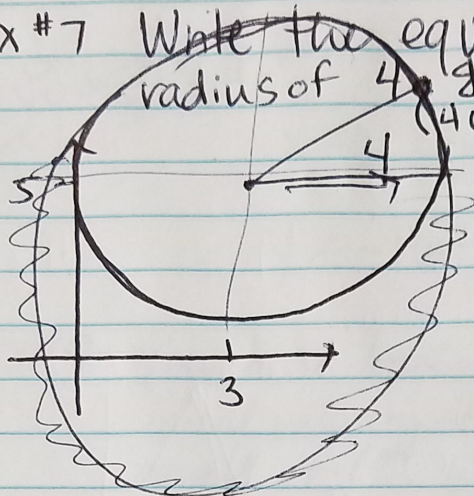
$$\begin{aligned}\vec{OP} &= \vec{OA} + t\vec{AB} \\ &= \langle -2, 3 \rangle + t\langle 3+2, 6-3 \rangle \\ &= \langle 5t-2, 3t+3 \rangle\end{aligned}$$

$$\begin{aligned}x &= 5t-2 \\ y &= 3t+3\end{aligned}$$

$-2 = 5t - 2$	$3 = 5t - 2$	or	$3 = 3t + 3$	$6 = 3t + 3$
$0 = 5t$	$5 = 5t$		$0 = 3t$	$3 = 3t$
$0 = t$	$1 = t$		$0 = t$	$1 = t$

$$\begin{aligned}x &= 5t-2 \\ y &= 3t+3 \\ 0 &\leq t \leq 1\end{aligned}$$

Ex #7 Write the equation for the circle w/
radius of 4 & centered @ (3, 5).
(4cos t, 4sin t)

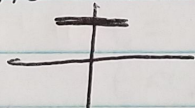


$$\begin{aligned} x &= 3 + 4\cos t \\ y &= 5 + 4\sin t \\ 0 &\leq t < 2\pi \end{aligned}$$

Ex #8 Your motion is represented by $s = -0.1(t^3 - 20t^2 + 110t - 85)$
as you walk on a path w/ $0 \leq t \leq 12$.

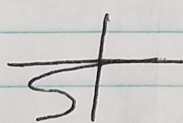
Describe your motion & identify
where you change directions.

As a line: $x_1 = -0.1(t^3 - 20t^2 + 110t - 85)$



$y_1 = 5$ ← randomly chosen!
 $0 \leq t \leq 12$

As a curve: $x_2 = -0.1(t^3 - 20t^2 + 110t - 85)$



$y_2 = t$
 $0 \leq t \leq 12$

You start 8.5 meters from the "center", move
left until $t = 3.9$ sec & are -9.919 m from
center, ^{then} move right until $t = 9.5$ sec & are
 -1.2375 m from center, then move left
from there until $t = 12$ sec & -8.3 m
from the center.