slide 1
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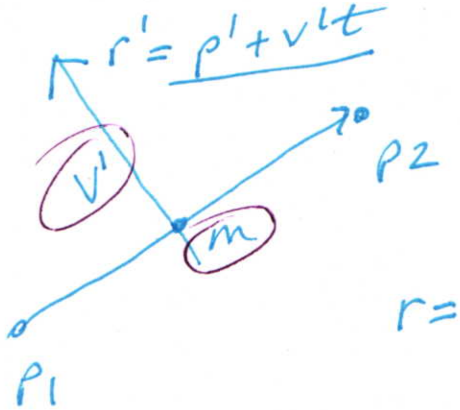


$r = p1 + tv$

$v = p2 - p1$

find p', v'

$v = \langle x, y \rangle$

$v \perp v'$

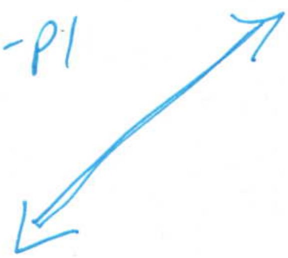
$v' = \langle -y, x \rangle$

perp

$m = \dfrac{(p1 + p2)}{2}$

$v \cdot v' = 0$

$v = p2 - p1$



$v' = p1 - p2 = -v$

Slide 2
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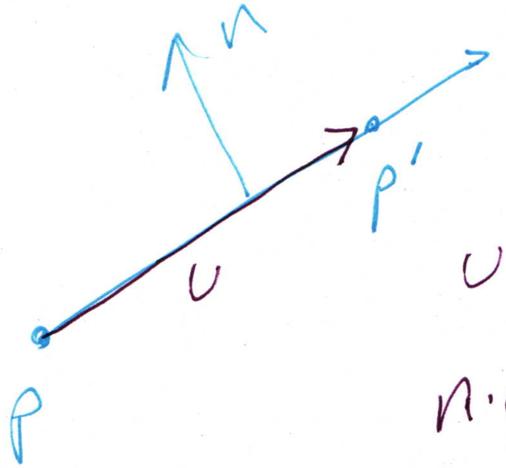
pt - pt p^1, p^2

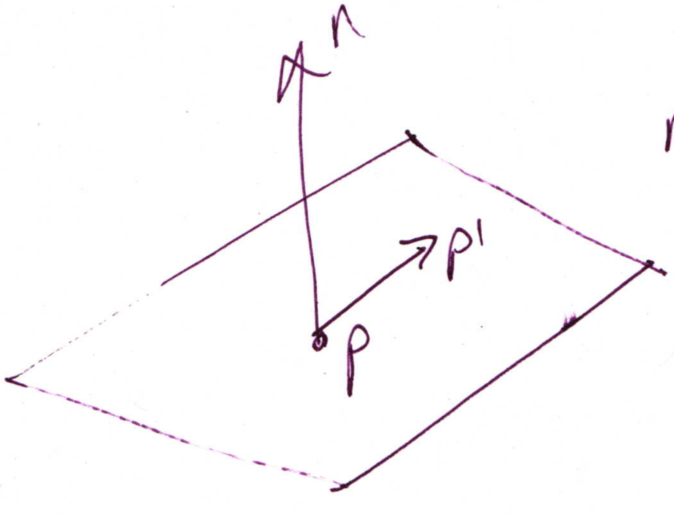
pt - vector $p + tv$

pt - normal p, n



$u = p' - p$

$n \cdot u = 0$



$n \cdot (p' - p) = 0$

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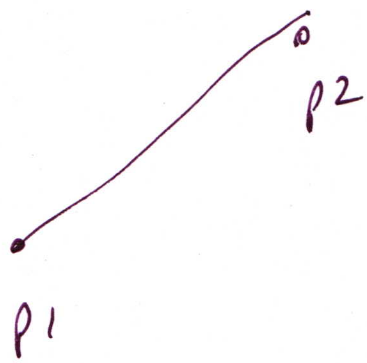

Vector2 p1 = new (1, 2, ~~3~~);
vector 2 p2 = new (3, 4);

Vector 2 m =
Vector 2 v =   //perp

Slide 4
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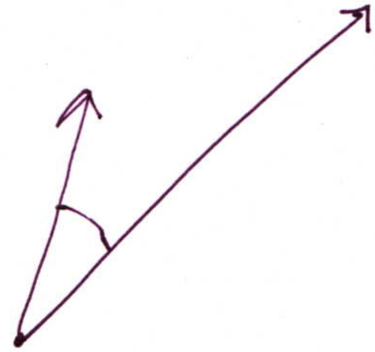
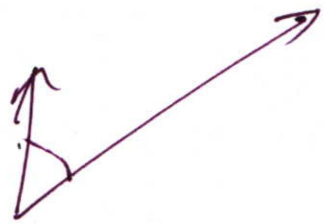


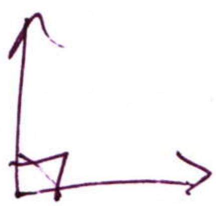
$$\arccos\left(\frac{u \cdot v}{|u||v|}\right)$$

$v = \langle 2, 3 \rangle$

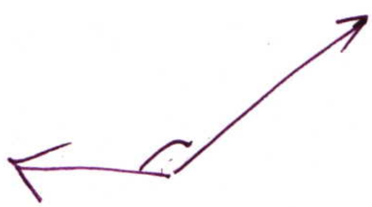
$u = \langle 1, 2 \rangle$



$u \cdot v > 0$ $\quad \theta < 90$



$u \cdot v = 0$ $\quad \theta = 90$



$u \cdot v < 0$ $\quad \theta > 90$

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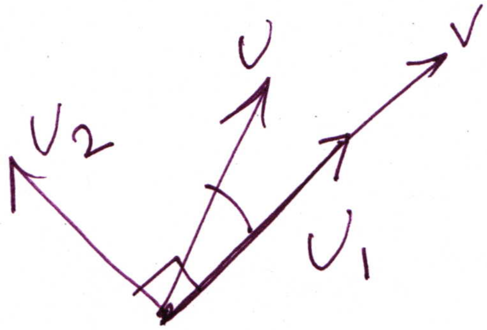

$\vec{v} = \langle 2,3 \rangle$

$\vec{u} = \langle 1,2 \rangle$

$u_1 = \frac{u \cdot v}{v \cdot v} v$

$u_2 = u - u_1$

$u_1 = \frac{8}{13} v = \frac{\vec{u} \cdot \vec{v}}{\vec{v} \cdot \vec{v}} v$

$u_2 = u - u_1 = \langle \overset{1,2}{\cancel{2,3}} \rangle - \frac{8}{13} \langle \overset{2,3}{\cancel{1,2}} \rangle$

$u = u_1 + u_2$

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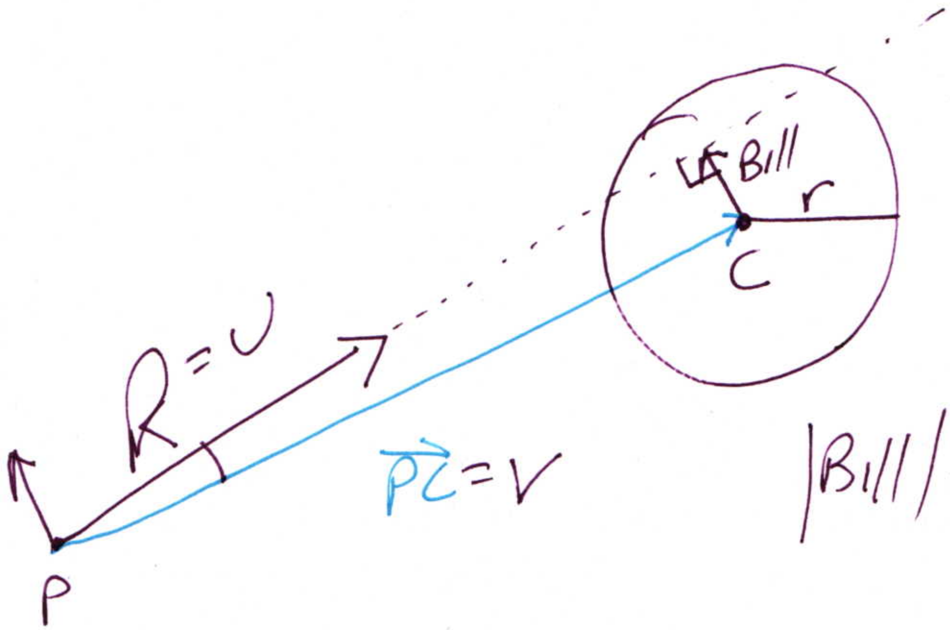
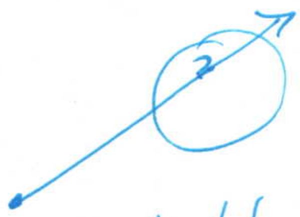


$|Bill| < r$

hit

miss!



hit!