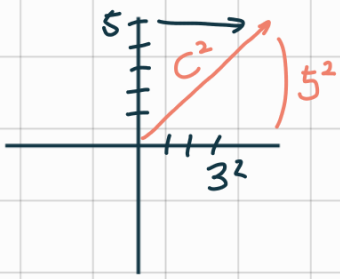
벡터 : 한 공간의 점




$\vec{a} = (3, 5)$

$\sqrt{3^2+5^2}$

$\vec{b} = (1, 3)$

$\sqrt{(3-1)^2+(5-3)^2}$

$|\vec{b} - \vec{a}| = |\vec{a} - \vec{b}|$

$\vec{a} = (3, 5)$

$(3, 2, 7, 1, 5)$

$3^2+2^2+7^2+1^2+5^2$

$\vec{a} = (3, 5)$

$\vec{b} = (7, 2)$

$\vec{a} + \vec{b} = (10, 7)$

$(3^2+7^2)+(5^2+2^2)$??

$\vec{a} - \vec{b} = (3^2-7^2)+(5^2-2^2)$

$= (-4, 3)$

$\vec{a}+(-\vec{b})$

벡터 + 마이너스
: 기하학적 의미 = 반대방향

$\vec{a} \times \vec{b}$

$(1,2)\ (2,3) = 1\times2+2\times3$

2가지 < 정곱 dot product = 내적 ⇒ 스칼라
cross product = 외적 ⇒ 벡터

$\vec{a} = (1,2,3)$

$\vec{b} = (-1,-2,-1)$

$\vec{a}\cdot\vec{b} = -8$ $\quad -1+(-4)+(-3)$

각각 요소 곱하고 더한다.

$|\vec{a}| = \sqrt{14}$ $\quad \vec{a}\cdot\vec{b} = |\vec{a}|\cdot|\vec{b}|\cos\theta$

$|\vec{b}| = \sqrt{6}$ $\quad \cos\theta = \frac{-8}{\sqrt{4}\sqrt{6}} = \sqrt{2}\sqrt{7}\sqrt{2}\sqrt{3}$

$= 2\sqrt{21}$

$= \frac{-8}{2\sqrt{21}} = \frac{-4}{\sqrt{21}}$

Arc 아코사인

$\theta = \cos^{-1}\left(\frac{-4}{\sqrt{21}}\right)$

$\cos\theta = 1$

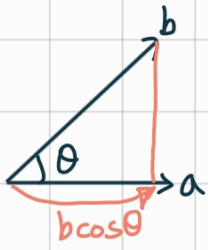
$\cos^{-1}1 = 0°$

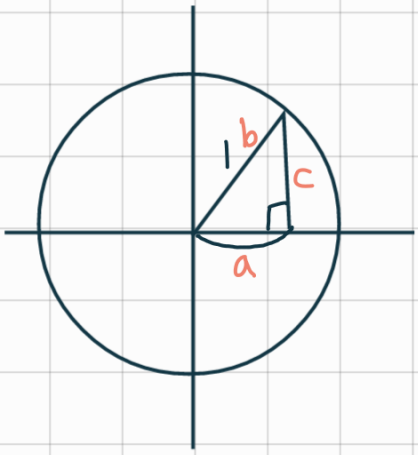
아코사인

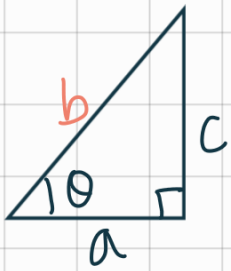
내적의 물리적 의미

$\vec{a}\cdot\vec{b} = |\vec{a}|\cdot|\vec{b}|\cos\theta = |\vec{a}|^2$

① ②




$\cos\theta = \frac{a}{b}$

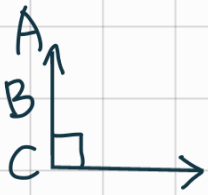
$\sin\theta = \frac{c}{b}$

$\tan = \frac{c}{a}$

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$= \frac{\frac{a}{c}}{\frac{b}{a}}$

직교 (Orthogona) = 수직

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