

Appendix J2

#6) let $a = \langle 3, 1 \rangle$ $b = \langle -2, 7 \rangle$

$$a \cdot b = |a| |b| \cos \theta \quad \text{solve for } \cos \theta$$

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

$$\cos \theta = \frac{3(-2) + 1(7)}{\sqrt{3^2 + 1^2} \sqrt{(-2)^2 + 7^2}}$$

$$= \frac{-6 + 7}{\sqrt{10} \sqrt{4 + 49}}$$

$$= \frac{1}{\sqrt{10} \sqrt{53}}$$

$$\cos \theta = \frac{1}{\sqrt{530}}$$