38. We apply Eq. 3-20 with Eq. 3-23. Where the length unit is not displayed, the unit meter is understood.

(a) We first note that $a = |\vec{a}| = \sqrt{3.2^2 + 1.6^2} = 3.58$ m and $b = |\vec{b}| = \sqrt{0.5^2 + 4.5^2} = 4.53$ m. Now,

$$\begin{aligned} \vec{a} \cdot \vec{b} = a_x b_x + a_y b_y &= ab \cos \phi \\ (3.2)(0.5) + (1.6)(4.5) &= (3.58)(4.53) \cos \phi \end{aligned}$$

which leads to $\phi = 57°$ (the inverse cosine is double-valued as is the inverse tangent, but we know this is the right solution since both vectors are in the same quadrant).

(b) Since the angle (measured from $+x$) for $\vec{a}$ is $\tan^{-1}(1.6/3.2) = 26.6°$, we know the angle for $\vec{c}$ is $26.6° - 90° = -63.4°$ (the other possibility, $26.6° + 90°$ would lead to a $c_x < 0$). Therefore, $c_x = c \cos -63.4° = (5.0)(0.45) = 2.2$ m.

(c) Also, $c_y = c \sin -63.4° = (5.0)(-0.89) = -4.5$ m.

(d) And we know the angle for $\vec{d}$ to be $26.6° + 90° = 116.6°$, which leads to $d_x = d \cos 116.6° = (5.0)(-0.45) = -2.2$ m.

(e) Finally, $d_y = d \sin 116.6° = (5.0)(0.89) = 4.5$ m.