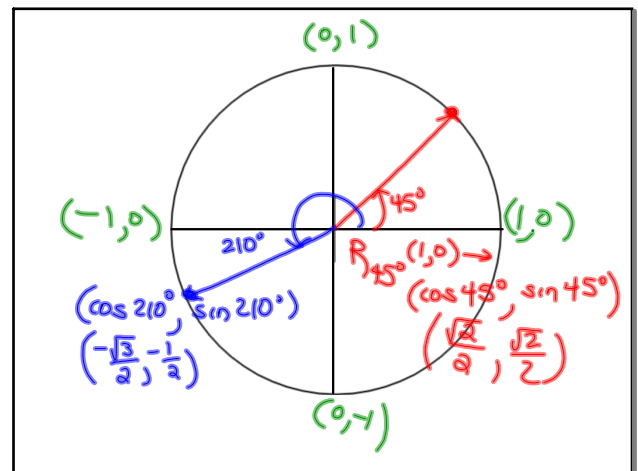


Special Rotations

Using the unit circle, we are able to determine the exact location of certain rotations of the point $(1, 0)$.

The coordinates of these rotations can be written using a mapping rule:

$$R_{\theta}(1, 0) \rightarrow (\cos\theta, \sin\theta)$$



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Use the unit circle to determine the exact value of each mapping rule.

$$a) \quad R_{30^\circ}(1, 0) = \begin{pmatrix} \cos 30^\circ & \sin 30^\circ \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix}$$

$$b) \quad R_{135^\circ}(1, 0) = \begin{pmatrix} -\frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{pmatrix}$$

$$c) \quad R_{240^\circ}(1, 0) = \begin{pmatrix} -\frac{1}{2} & -\frac{\sqrt{3}}{2} \end{pmatrix}$$

$$d) \quad R_{330^\circ}(1, 0)$$

$$e) \quad R_{135^\circ}(1, 0) = \begin{pmatrix} -\frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \end{pmatrix}$$

$$f) \quad R_{230^\circ}(1, 0) = \begin{pmatrix} \cos 230^\circ & \sin 230^\circ \\ -0.6428 & -0.7660 \end{pmatrix}$$

$$g) \quad R_{418^\circ}(1, 0) = (0.5299, 0.8480)$$

$$h) \quad R_{750^\circ}(1, 0)$$

$$i) \quad R_{-495^\circ}(1, 0) = \begin{pmatrix} -\frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \end{pmatrix}$$

$$j) \quad R_{1305^\circ}(1, 0)$$

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