BECA / Dr. Huson / Geometry 10th Grade
Unit 11: Algebra II introduction
21 May 2020

Name: Solutions

## 11.8 Problem set: Reference angles

1. Two right triangles, $\triangle ABC$ and $\triangle ADE$, are shown in the unit circle with the coordinates of $B$ and $D$ marked.

   Identify each true statement.

   ☐ (a) $AC = 1$ ✗

   ☑ (b) The altitude of $\triangle ABC$ is $\frac{\sqrt{2}}{2}$

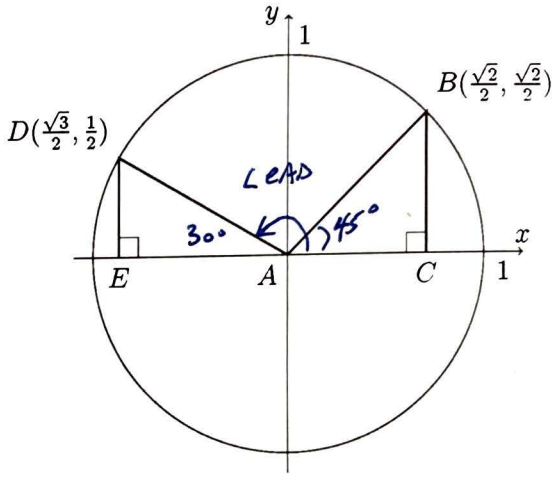
   ☑ (c) $\tan \angle BAC = 1$

   ☑ (d) $m\angle BAC = 45°$

   ☐ (e) $m\angle DAE = 60°$ ✗

   ☑ (f) $AD = 1$

   (g) Mark the $\angle CAD$ on the diagram. State its measure, given its reference angle's measure, $m\angle DAE = 30°$. Justify your answer.



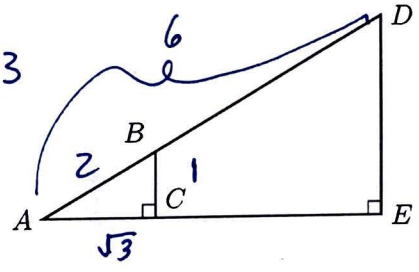

$m\angle CAD = 150°$. $\angle CAD$ is an obtuse angle falling in the second quadrant. It is supplementary to $\angle DAE$. $180 - 30 = 150°$

2. Given two 30-60-90 degree triangles, $\triangle ABC \sim \triangle ADE$, with ~~$AC$~~ BC $= 1$, ~~$BC$~~ AC $= \sqrt{3}$, $AB = 2$. If $AD = 6$ find the lengths of the other two sides.

   (a) ~~$EF$~~ $= 3 \times 1 = 3$ (BC → DE)

   AB → AD
   $2 \to 6$
   $k = \frac{6}{2} = 3$

   (b) ~~$DF$~~ $= 3\sqrt{3}$ (AC → AE)




3. Simplify. Rationalize denominators.

   (a) $\sqrt{72}$
   $= \sqrt{36}\sqrt{2}$
   $= 6\sqrt{2}$

   (b) $\sqrt{50} - 4\sqrt{2}$
   $= \sqrt{25}\sqrt{2} - 4\sqrt{2}$
   $= 5\sqrt{2} - 4\sqrt{2}$
   $= \sqrt{2}$

   (c) $\frac{5}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{5\sqrt{5}}{5}$
   $= \sqrt{5}$