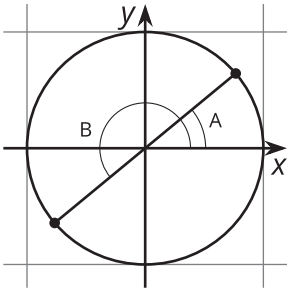
Lesson 6 Practice Problems

1. The picture shows angles A and B. Explain why $\sin(B) = -\sin(A)$ and why $\cos(B) = -\cos(A)$.



2. Which statements are true? Select **all** that apply.

   A. $\sin(\theta) > 0$ for an angle θ in quadrant 2

   B. $\cos(\theta) > 0$ for an angle θ in quadrant 2

   C. $\tan(\theta) > 0$ for an angle θ in quadrant 2

   D. $\sin(\theta) > 0$ for an angle θ in quadrant 3

   E. $\cos(\theta) > 0$ for an angle θ in quadrant 3

   F. $\tan(\theta) > 0$ for an angle θ in quadrant 3

3. The tangent of an angle satisfies $\tan(\theta) = 10$.

   a. Which quadrant could θ lie in? Explain how you know.

   b. Estimate the possible value(s) of θ. Explain your reasoning.

4. Evaluate each of the following:

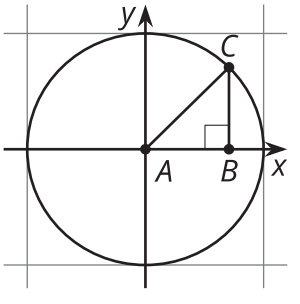
   a. $\tan\left(\frac{5\pi}{4}\right)$

   b. $\sin\left(\frac{3\pi}{2}\right)$

   c. $\cos\left(\frac{7\pi}{4}\right)$

5. The sine of an angle θ in the second quadrant is 0.6. What is $\tan(\theta)$? Explain how you know.

6. Triangle ABC is an isosceles right triangle in the unit circle.

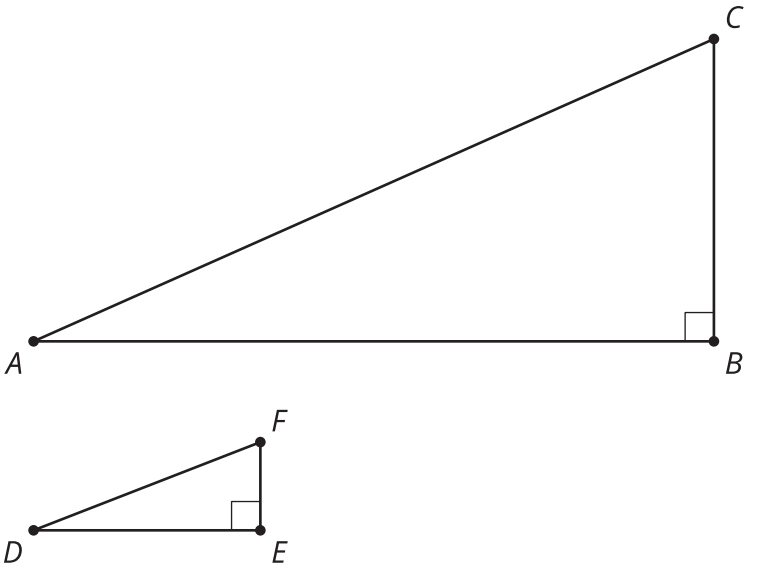


   a. Explain why $\sin(A) = \cos(A)$.

   b. Use the Pythagorean Theorem to explain why $2(\sin(A))^2 = 1$.

(From Unit 6, Lesson 5.)

7. Triangle DEF is similar to triangle ABC. The scale factor going from $\triangle DEF$ to $\triangle ABC$ is 3.

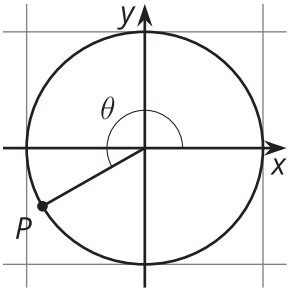


a. Explain why the length of segment AB is 3 times the length of segment DE and the length of segment BC is 3 times the length of segment EF.

b. Explain why $\sin(A) = \sin(D)$.

(From Unit 6, Lesson 2.)

8. Which of the following is true for angle θ? Select **all** that apply.



A. $\sin(\theta) < 0$

B. $\sin(\theta) > 0$

C. $\cos(\theta) < 0$

D. $\cos(\theta) > 0$

E. $\sin(\theta) > \cos(\theta)$

F. $\sin(\theta) < \cos(\theta)$

(From Unit 6, Lesson 5.)