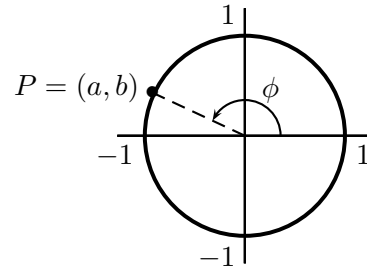


8. [10 points]

The point P (with coordinates (a, b)) is on the unit circle at angle ϕ , as shown in the diagram to the right. Use this information to **find the values below in terms of a and/or b .**

NOTE: Your answers should NOT include function names like “sin”, “cos”, or “tan”.

You do not need to show your work for this problem.



a. [2 points] Find $\sin(\phi)$.

Answer: $\sin(\phi) =$ _____

b. [2 points] Find $\tan(-\phi)$.

Answer: $\tan(-\phi) =$ _____

c. [2 points] Find $\cos(\phi + \pi)$.

Answer: $\cos(\phi + \pi) =$ _____

d. [2 points] Find $\sin(\phi - \frac{\pi}{2})$.

Answer: $\sin(\phi - \frac{\pi}{2}) =$ _____

e. [2 points] Find the coordinates of the point at angle ϕ on the circle of radius 7 centered at the point $(-3, 2)$.

Answer: _____