11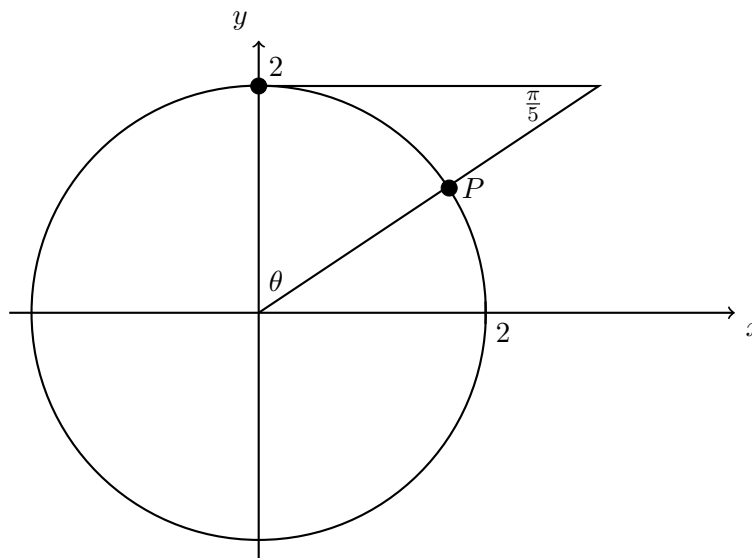. [10 points] Consider the figure below in the xy-plane containing a circle of radius two and a right triangle with one angle measuring $\frac{\pi}{5}$ radians.

For all parts of this problem, express your answers in **exact** form.

a. [2 points] Find θ in radians.

$$\theta = \underline{\quad\quad 3\pi/10 \quad\quad}$$

b. [2 points] Find the length of the part of the circle **inside** the triangle between the point P and the point $(0, 2)$.

$$\text{The length} = \underline{\quad\quad 3\pi/5 \quad\quad}$$

c. [2 points] Starting at the point $(2, 0)$ if we rotate 1 radian counterclockwise around the circle, is the resulting point inside the triangle, outside the triangle, or is it impossible to tell? Circle your answer.

$\boxed{\text{inside the triangle}}$ \qquad outside the triangle \qquad impossible to tell

d. [4 points] Find the $x-$ and $y-$coordinates of the point P.

$$P = (\underline{2\cos(\pi/5)},\ \underline{2\sin(\pi/5)})$$