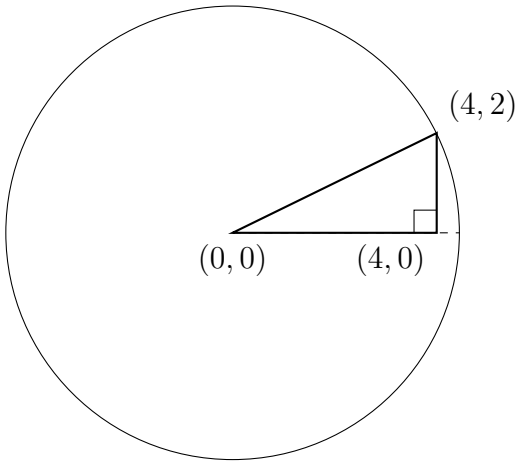
8.9 Do Now: The equation for a circle

1. A circle centered at the origin includes the point $P(4, 2)$, as shown below.

   (a) Find the radius of the circle. Simplify the radical.

   (b) Find the point on the circle on the same diameter as P.



2. What is the equation of a circle with center $(3, -2)$ and radius $r = 4$. Use the equation $(x - a)^2 + (y - b)^2 = r^2$.

Algebra competencies

3. Expand each binomial-squared expression to the form $ax^2 + bx + c$.

   (a) $(x - 5)^2$ (b) $(y + 7)^2$

4. Simplify each radical.

   (a) $\sqrt{12}$ (b) $\sqrt{40}$

Early Finishers: Using the distance formula to prove a parallelogram

5. In this problem use the following theorem (copy it at the bottom of the page after your calculations):

   A quadrilateral is a parallelogram if and only if it's opposite sides are congruent.

   Shown below is quadrilateral $ABCD$, $A(2, -1)$, $B(6, -2)$, $C(8, 4)$, and $D(4, 5)$.

   Prove it is a parallelogram by

   (a) finding the length of each of the four sides,

   (b) stating which sides are congruent,

   (c) copying the theorem as your conclusion.