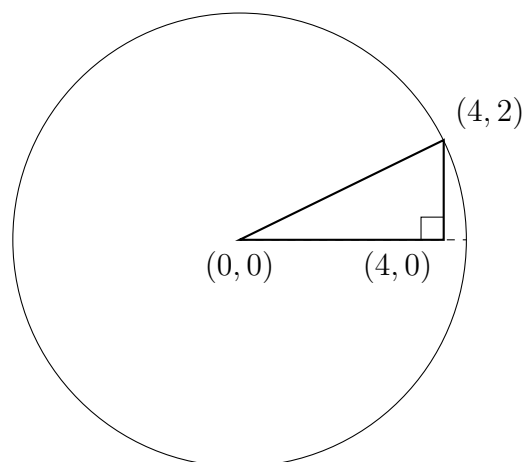


### 8-9DN-Circle-equation

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.

