Code from assignment.py, circleXquad() function:

```
    xDistance = math.fabs(shapeA.x() - shapeB.x())
    yDistance = math.fabs(shapeA.y() - shapeB.y())

    xOverlap = (xDistance <= shapeA.getHalfWidth() + shapeB.getHalfWidth())
    yOverlap = (yDistance <= shapeA.getHalfHeight() + shapeB.getHalfHeight())

    return (xOverlap and yOverlap)
```

The algorithm works as follows:

1)The first pair of lines calculate the absolute values of the x and y difference between the center of the circle and the center of the rectangle. This collapses the four quadrants down into one, so that the calculations do not have to be done four times. The image shows the area in which the center of the circle must now lie. Note that only the single quadrant is shown. The rectangle is the grey area, and the red border outlines the critical area which is exactly one radius away from the edges of the rectangle. The center of the circle has to be within this red border for the intersection to occur.

2) The second pair of lines eliminate the easy cases where the circle is far enough away from the rectangle (in either direction) that no intersection is possible. This corresponds to the green area in the image.