Kasish's questions

Chirag Gokani
chiragokani.org
University of Texas at Dallas

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Question 11

The general equation of a circle in Cartesian (x, y) coordinates is

$$(x - x_{\text{center}})^2 + (y - y_{\text{center}})^2 = R^2 \tag{1}$$

where the center of the circle is at coordinates $(x_{\text{center}}, y_{\text{center}})$ and where the radius of the circle is R.

You are given that the center of circle is at the origin, so $(x_{\text{center}}, y_{\text{center}}) = (0, 0)$. You are also given that $R = 10$. Using equation (1), your circle follows the equation

$$x^2 + y^2 = 100 \tag{2}$$

You are asked to find the coordinates on the circle where x and y are both negative and equal. If they are both equal, $x = y$, so equation (2) becomes

$$x^2 + x^2 = 100$$

or

$$2x^2 = 100$$

Now, solve this equation for x using your algebra skills. Pick the *negative* solution, since the problem asks you to find a *negative* value of x. This gives you the value of x, which is equal to the value of y.

Question 20

Parallelograms do not have diagonals that are equal to each other, nor do they have diagonals that are perpendicular to each other. You can draw a parallelogram on a piece of paper and at least visually show yourself that the diagonals are not equal and intersect in non-perpendicular ways.

Rectangles have diagonals that are equal in length but are not perpendicular to each other.

Rhombuses have diagonals that are perpendicular to each other but are not equal in length.

Squares are the only shape that have equal *and* perpendicular diagonals.