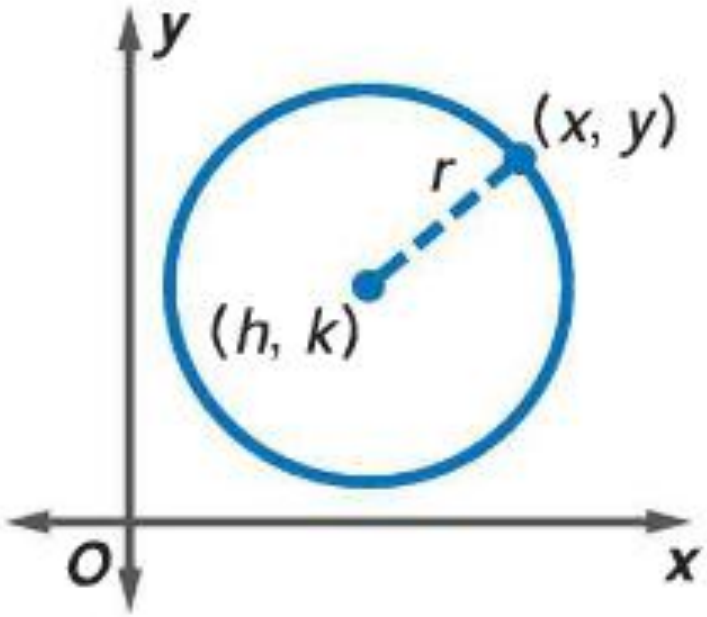
Equations of Circles

Equation of a Circle in Standard Form

The standard form of the equation of a circle with center at (h,k) and radius r is

$(x - h)^2 + (y - k)^2 = r^2$.



Examples

Write the equation of the circle.

center at (1,-8), radius 7

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center at (1,-8), radius 7

$h = 1, k = -8, r = 7$

$(x - h)^2 + (y - k)^2 = r^2$

$(x - 1)^2 + (y + 8)^2 = 49$

Examples

Write the equation of the circle.

center at (4,-1), diameter 8

Examples

Write the equation of the circle.

center at (4,-1), diameter 8

$h = 4, k = -1, r = 4$

$(x - h)^2 + (y - k)^2 = r^2$

$(x - 4)^2 + (y + 1)^2 = 16$

Examples

Write the equation of the circle.

center at (-2,4), passes through point (-6,7)

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center at (-2,4), passes through point (-6,7)

$h = -2, k = 4, r = 5$ radius: 4 units in x-direction, 3 units in y-direction

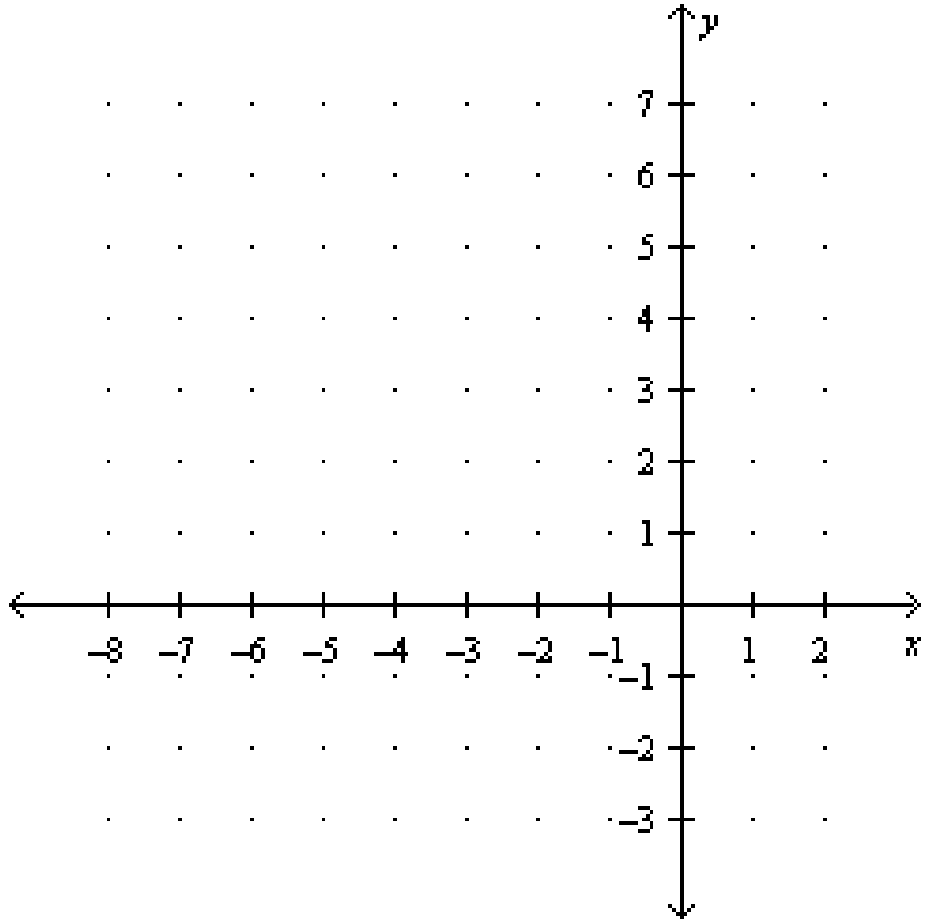
$(x - h)^2 + (y - k)^2 = r^2$

$(x + 2)^2 + (y - 4)^2 = 25$

Examples

Three tornado sirens are placed strategically around a town so they can be heard by all. Write the equation of the circle if the coordinates of the sirens are *A*(-8,3), *B*(-4,7), and *C*(-4,-1).

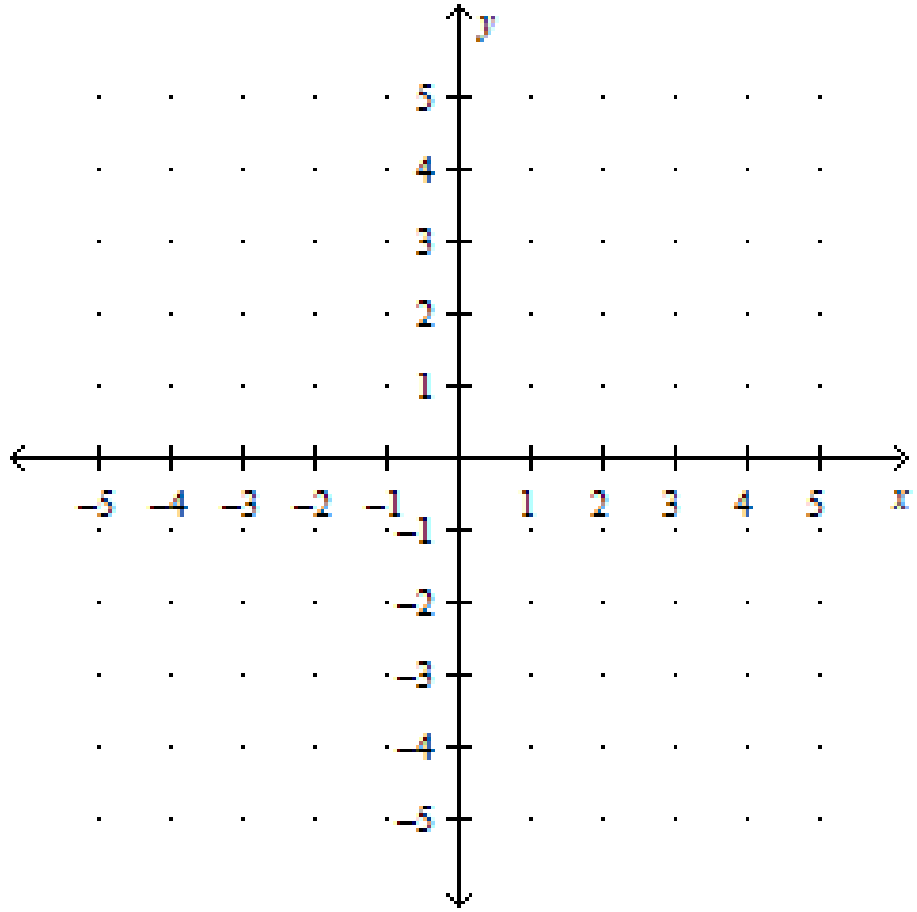
Examples



Examples

Find the point(s) of intersection between

$x^2 + y^2 = 4$ and $y = x$



Examples

Find the point(s) of intersection between

$x^2 + y^2 = 4$ and $y = x$

$x^2 + x^2 = 4$	substitute y = x
$2x^2 = 4$	add
$x^2 = 2$	divide both sides by 2
$\sqrt{x^2} = \pm\sqrt{2}$	take square roots
$x = \pm\sqrt{2}$	simplify