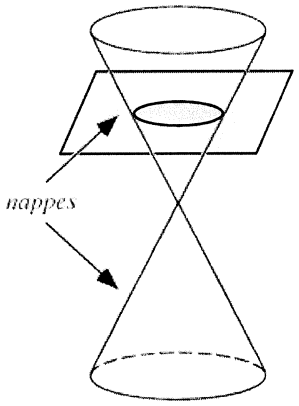
Circles

Anton 1.5

Double Right Cone

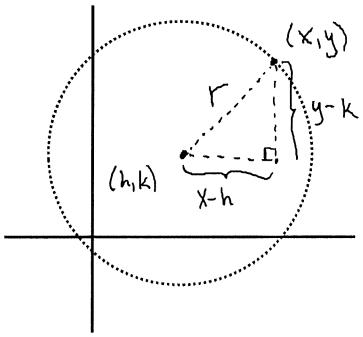


How could we slice the cone with a plane to get a circle?

$\perp$ TO AXIS OF DOUBLE CONE

Geometric definition of a circle:

A set of coplanar points equidistant from a point. (CENTER)



USING PYTHAGOREAN THM

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

→

Standard Form of the equation of a Circle with center at (h,k) and radius = r:

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

→

Find the equation of a circle with center at $(-5,3)$ and radius = 4:

Standard form: $(x+5)^2 + (y-3)^2 = 16$

Quadratic form: $x^2+10x+25+y^2-6y+9=16$

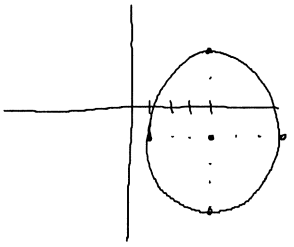
$x^2+y^2+10x-6y+18=0$

→

Find the center an radius of the circle with the given equation. Graph the circle.

REWRITE IN STANDARD FORM:

$$x^2 + y^2 - 8x + 2y + 8 = 0$$



$x^2-8x+y^2+2y+8=0$

$x^2-8x+\underline{16}+y^2+2y+\underline{1}=-8+\underline{16}+\underline{1}$

$(x-4)^2+(y+1)^2=9$

$C(4,-1)\quad r=3$

→

Find the center an radius of the circle with the given equation. Graph the circle.

$$2x^2 + 2y^2 + 24x - 81 = 0$$

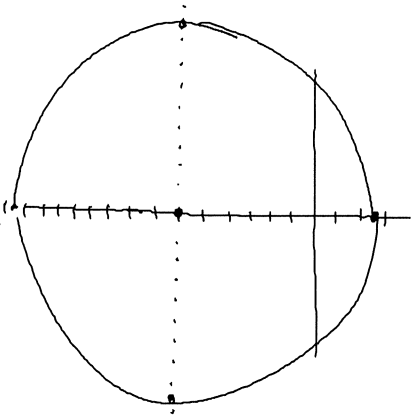
$2x^2 + 24x + 2y^2 = 81$

$2\left(x^2 + 12x + \underline{36} + y^2\right) = 81 + \underline{72}$

$2\left((x+6)^2 + y^2\right) = 153$

$(x+6)^2 + y^2 = \frac{153}{2}$

$C(-6, 0)$ $r = \sqrt{\frac{153}{2}}$



→

Classwork: Anton 1.5

 # 28, 30, 38, 42, 46, 50, 54

Homework: Anton 1.5

 # 23 – 45 every other odd
 # 49 – 55 odd