Honors Precalculus with Trigonometry (OM013)
Problem Set 1

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Please show all work because you will be graded on the clarity of your explanation as well as the correctness of your work. An answer with no work/explanation will receive zero credit.

1. Find the center-radius form of the equation of the circle with center at (-7, -4) and tangent to the x-axis. (Hint: A line tangent to a circle touches it at exactly one point.)

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

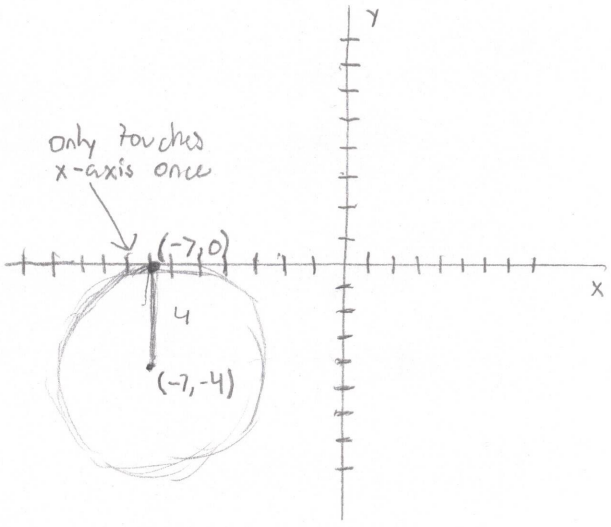
$(h,k)=(-7,-4)$

$(x+7)^2+(y+4)^2=r^2$

Radius is 4 ⟶

$(x+7)^2+(y+4)^2=4^2$

$\boxed{(x+7)^2+(y+4)^2=16}$



The radius needs to be the lowest distance that the circle only touches the x-axis once and that distance is 4.

2. Decide whether or not the equation has a circle as its graph. If it does, give the center and the radius. If it does not, describe the graph: $x^2+y^2+6x-8y+26=0$

$x^2+y^2+6x-8y+26=0$

$(x^2+6x)+(y^2-8y)+26=0$

$(x^2+6x+9)+(y^2-8y+16)+1=0$

$(x+3)^2+(y-4)^2+1=0$

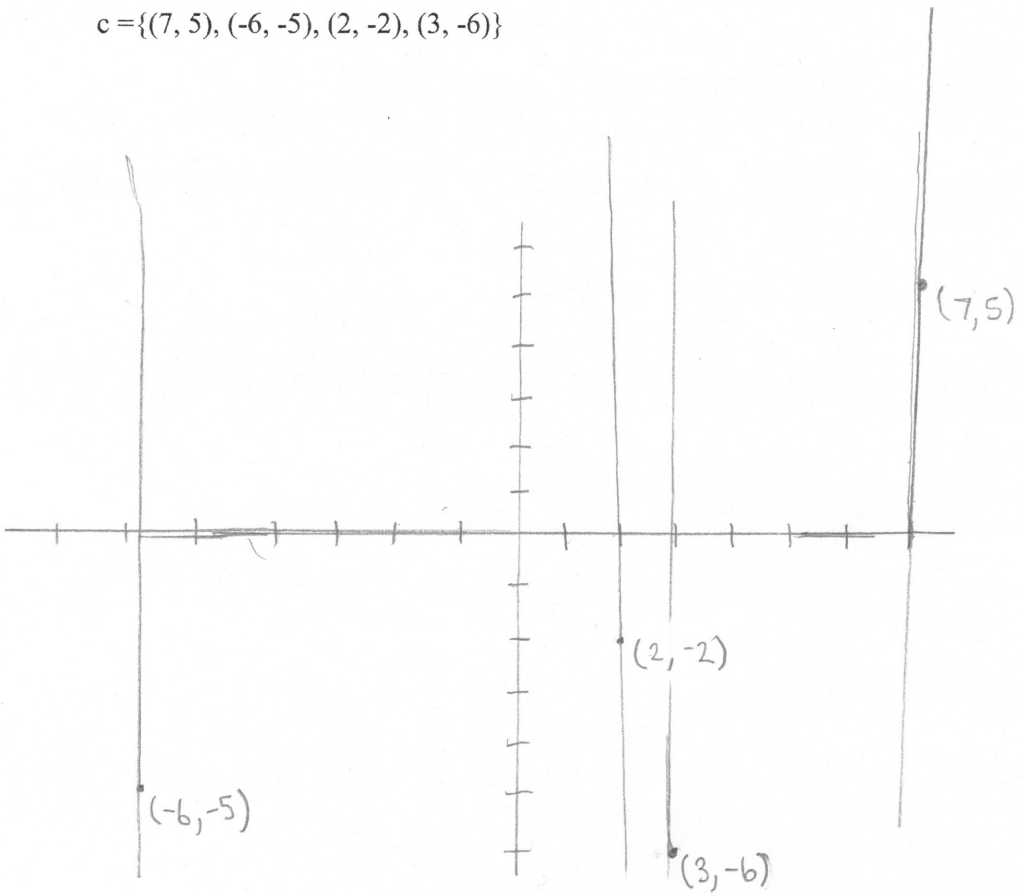
$(x+3)^2+(y-4)^2=-1$

center $(-3,4)$, radius $\sqrt{-1}$

Since $\sqrt{-1}$ is an imaginary number, the graph is empty - $\emptyset$

3. Determine whether the relation is a function.

c ={(7, 5), (-6, -5), (2, -2), (3, -6)}



passes vertical line test - each input has exactly one output

C is a function