Math 116 Mon 26 Sep 2016

Prep for Test 1 - mostly 2.1 - 2.7

2.1: Distance formula (and midpoint)

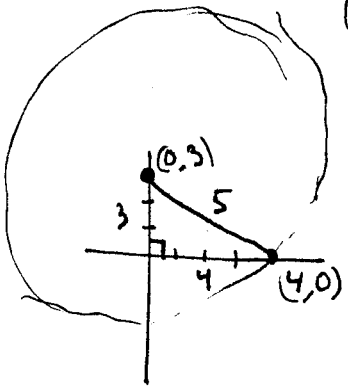
2.2: Center-Radius form of the Equation of a Circle

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

example: $(x-5)^2+(y+1)^2=10$ Find the center and radius.

center $=(5,-1)$ radius $=\sqrt{10}$

(eqn → graph)



ex (graph to eqn): Center $=(0,3)$, circle passes through $(4,0)$

Find the equation.

$x^2+(y-3)^2=r^2$ and $(x,y)=(4,0)$ satisfies the equation

$4^2+(0-3)^2=r^2$ is true, so $r^2=25$

answer: $x^2+(y-3)^2=25$

ex (general form → center-radius form)

$$x^2+y^2+8x-6y+16=0$$

$$x^2+8x+16+y^2-6y+9=-16+16+9$$

$$(x+4)^2+(y-3)^2=9$$

center $=(-4,3)$, radius $=3$

2.3 Functions ex: $f(x)=\sqrt{x-4}$ domain $=\{x \mid x-4\geq 0\}$

$=\{x \mid x\geq 4\}$

$=[4,\infty)$

$$f(x)=\frac{x-2}{x^2-8x+15}$$ domain = all real numbers except 3 and 5

$$=\frac{x-2}{(x-3)(x-5)}$$

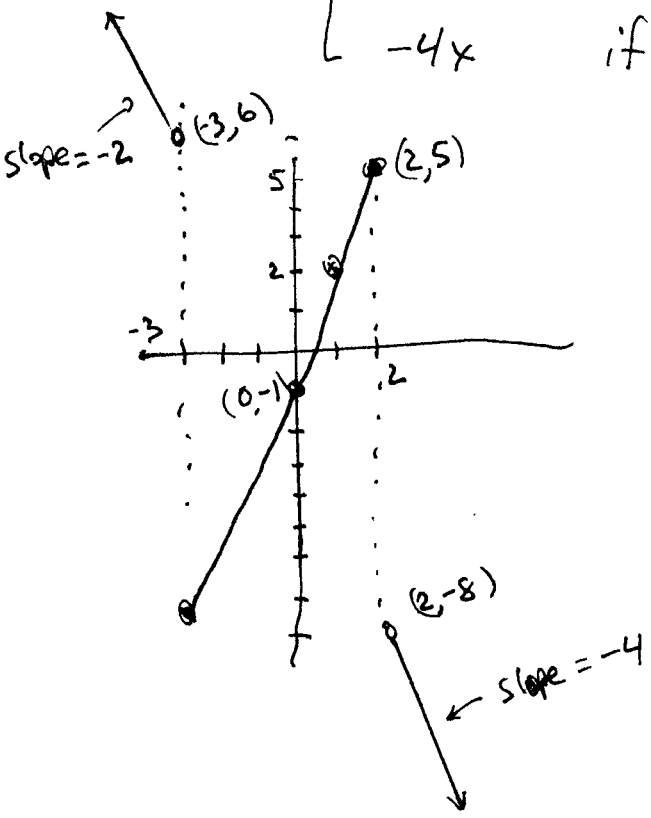
2.4 and 2.5 Linear functions and equations of lines.

ex: Find the slope-intercept form of line through $(5,-3)$ and $(1,-7)$.

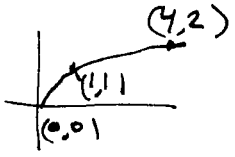
ex: [Ditto] .. through $(3,-2)$ parallel to $2x-y=5$.

2.6 Graphs of piecewise defined functions

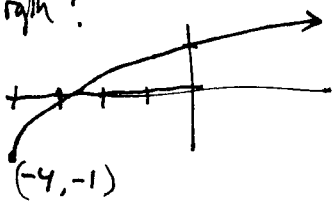
28) $$f(x)=\begin{cases} -2x & \text{if } x<-3 \\ 3x-1 & \text{if } -3\le x\le 2 \\ -4x & \text{if } x>2 \end{cases}$$



2.7 Given the graph $y=\sqrt{x}$ looks like



what is the equation of this graph?



Answer: $y=\sqrt{x+4}-1$