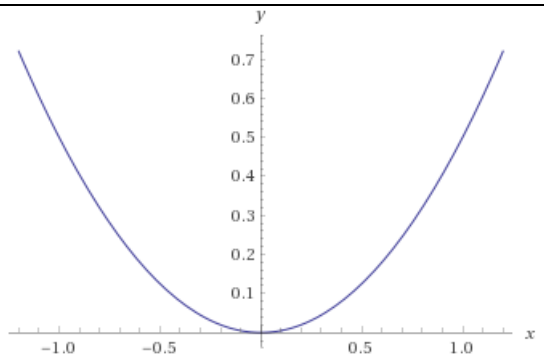
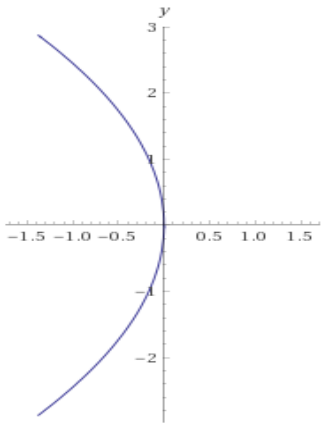
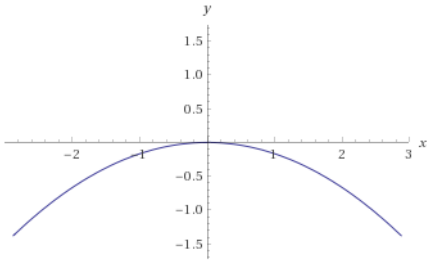
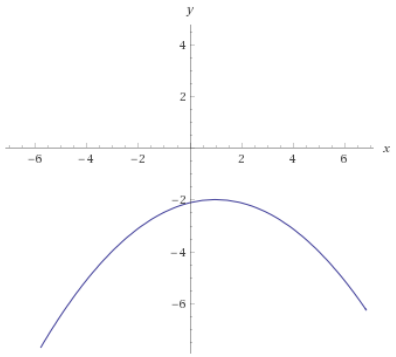
PRECALCULUS PROBLEM SESSION # 14 SOLUTIONS- PARABOLAS

Parabolas

A) Find the vertex, focus, and directrix of the parabolas and sketch its graph.

Question Number	Vertex	Focus	Directrix	Graph
1	$(0,0)$	$\left(0,\frac{1}{2}\right)$	$y=-\frac{1}{2}$	
2	$(0,0)$	$\left(-\frac{3}{2},0\right)$	$x=\frac{3}{2}$	
3	$(0,0)$	$\left(0,-\frac{3}{2}\right)$	$y=\frac{3}{2}$	
4	$(1,-2)$	$(1,-4)$	$y=0$	

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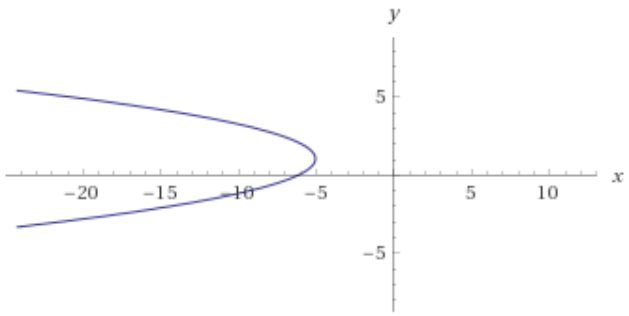
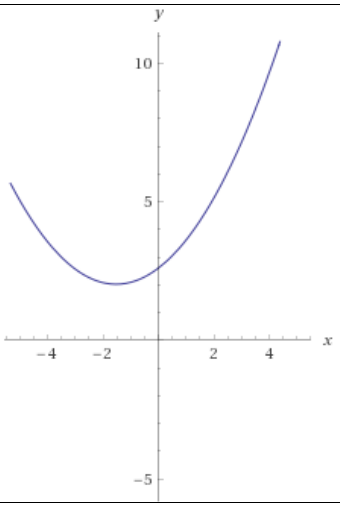
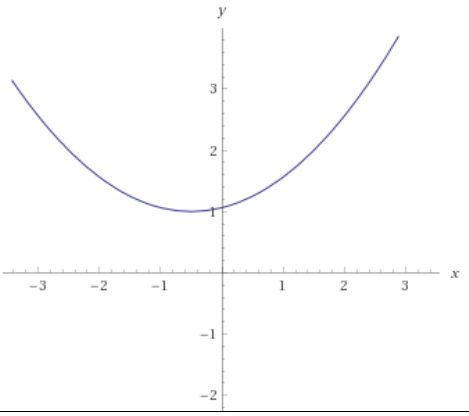
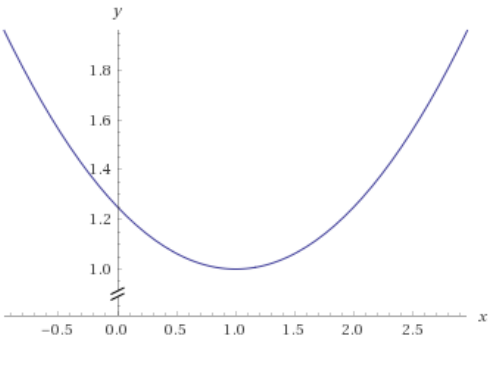
5	$(-5,1)$	$\left(-\frac{21}{4},1\right)$	$x=\frac{19}{4}$	
6	$\left(-\frac{3}{2},2\right)$	$\left(-\frac{3}{2},3\right)$	$y=1$	
7	$\left(-\frac{1}{2},1\right)$	$\left(-\frac{1}{2},2\right)$	$y=0$	
8	$(1,1)$	$(1,2)$	$y=0$	

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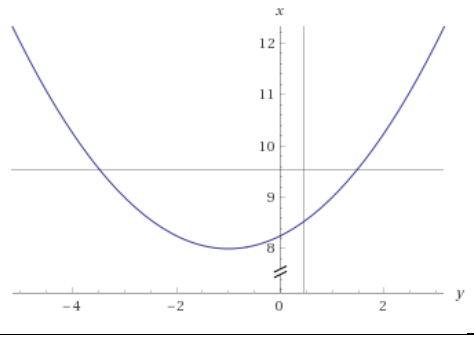
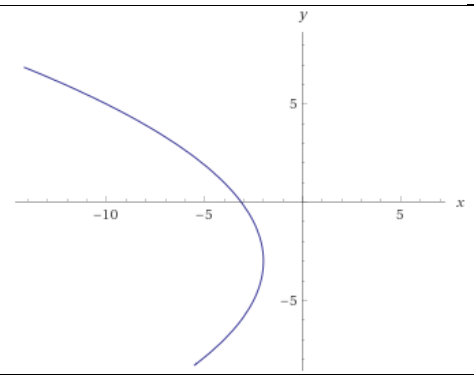
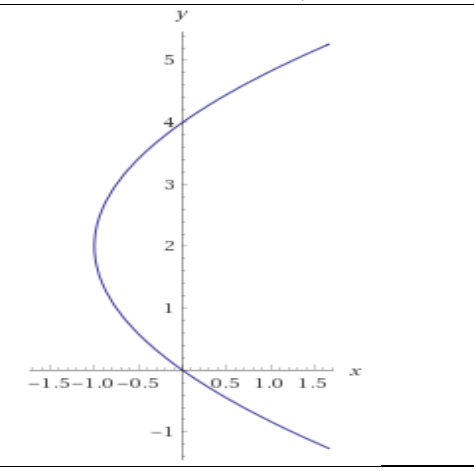
9	$(8,-1)$	$(9,-1)$	$x=7$	
10	$(-2,-3)$	$(-4,-3)$	$x=0$	
11	$(-1,2)$	$(0,2)$	$x=-2$	

B) Find the standard form of the equation of the parabola with its vertex at the origin.

1. $x^2=-6y$
2. $y^2=-8x$
3. $x^2=4y$
4. $y^2=-8x$
5. $y^2=9x$
6. $x^2=\frac{3}{2}y$
7. $y^2=-18x$

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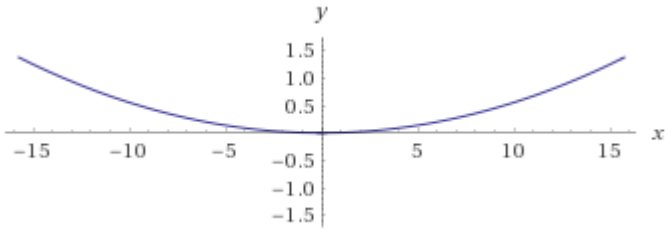
C) Find the standard form of the equation of the parabola.

1. $(y-2)^2 = -8(x-5)$
2. $x^2 = 8(y-4)$
3. $(x-2)^2 = 8y$
4. $(x-3)^2 = -(y-1)$
5. $y^2 = 4(x+4)$

D) Word problem

a.)



b.) $x^2 = 180y$

c.)

X	0	20	40	60
Y	0	$\frac{20}{9}$	$\frac{80}{9}$	20