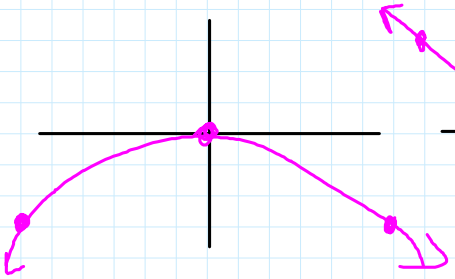
10.2 Parabolas

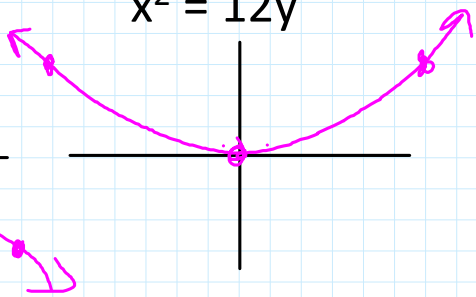
Thursday, April 15, 2010
12:43 PM

Sketch:

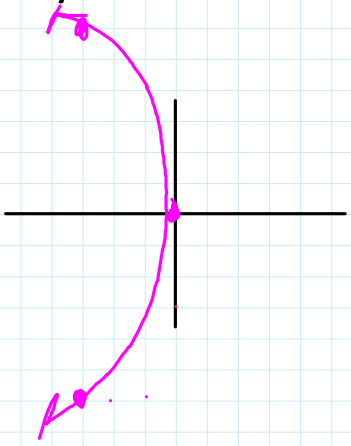
$x^2 = -12y$



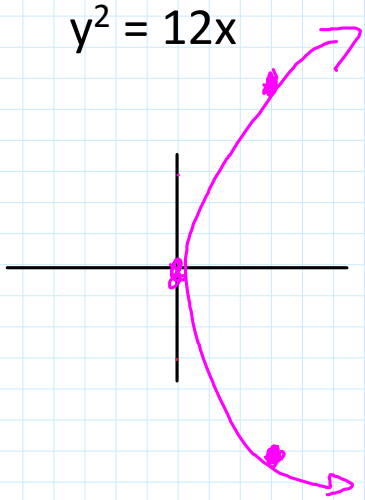
$x^2 = 12y$



$y^2 = -12x$



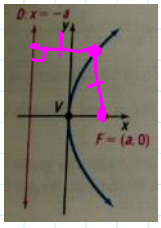
$y^2 = 12x$

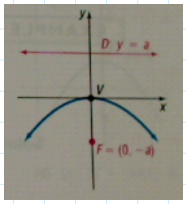


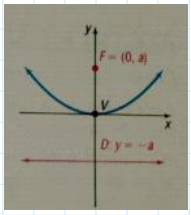
Match:

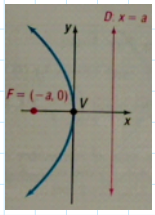
a: $y^2 = 4ax$	b: $y^2 = -4ax$	c: $x^2 = 4ay$	d: $x^2 = -4ay$

1. A 2. D 3. C 4. B





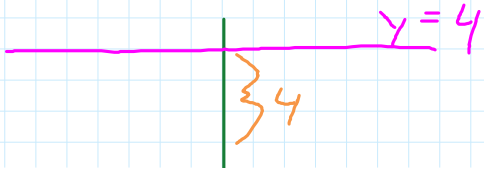




Analyze (find vertex, focus, and directrix):

$x^2 = -16y$

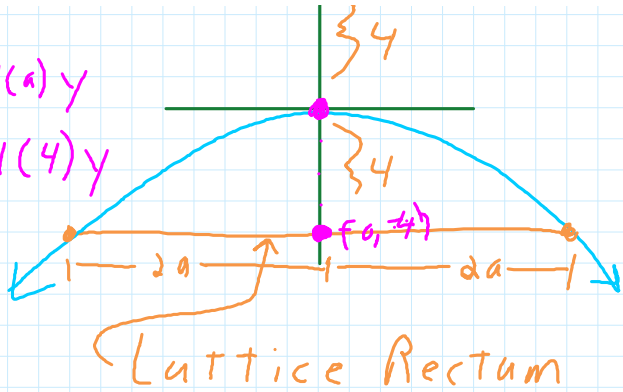
Form: $x^2 = -4(a)y$



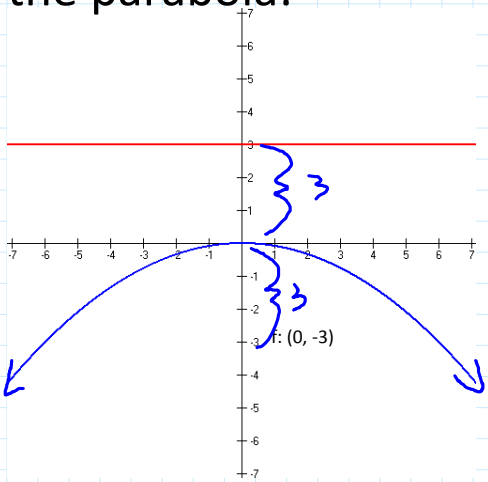
$x^2 = -16y$

Form: $x^2 = -4(a)y$

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



Give the equation for the parabola:



form:

$x^2 = -4ay$

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

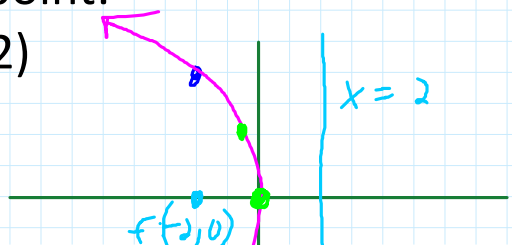
$\boxed{x^2 = -12y}$

Find the equation then analyze the parabola:

Vertex = (0,0)

Graph contains the point:

(-1/2, 2) and (-1/2, -2)



form: $y^2 = -4ax$

form: $y^2 = -4ax$

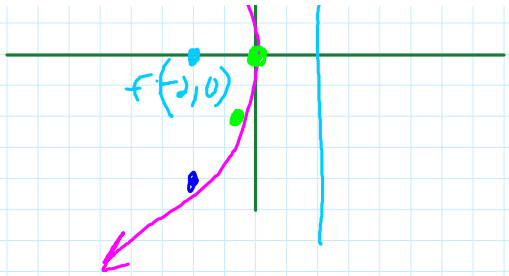
$2^2 = -4a(-\frac{1}{2})$

$4 = 2a$

$\boxed{2 = a}$

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

$\boxed{y^2 = -8x}$



Analyze (find vertex, focus, and directrix):

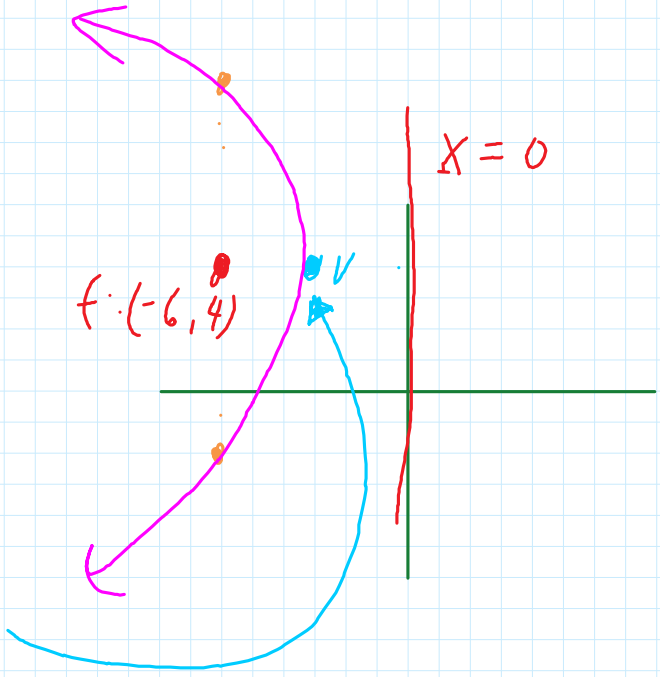
$(y-4)^2 = -12(x+3)$

form: $y^2 = -4ax$

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

Shift Left 3 Up 4

Vertex (0,0) -> (-3, 4)



Analyze (find vertex, focus, and directrix):

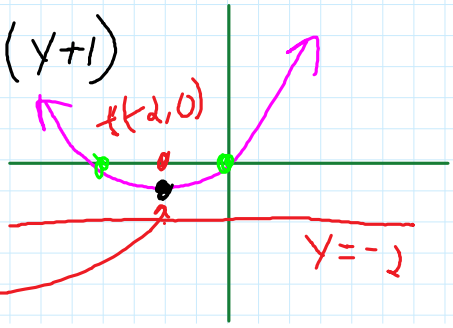
$x^2 + 4x - 4y = 0$

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

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

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

$V: (-2, -1)$



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

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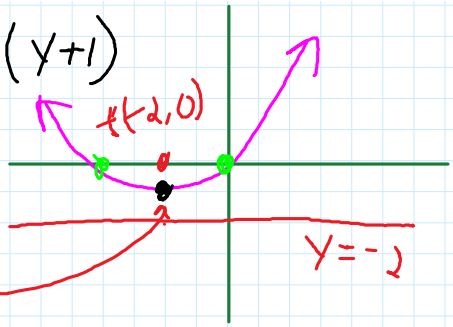
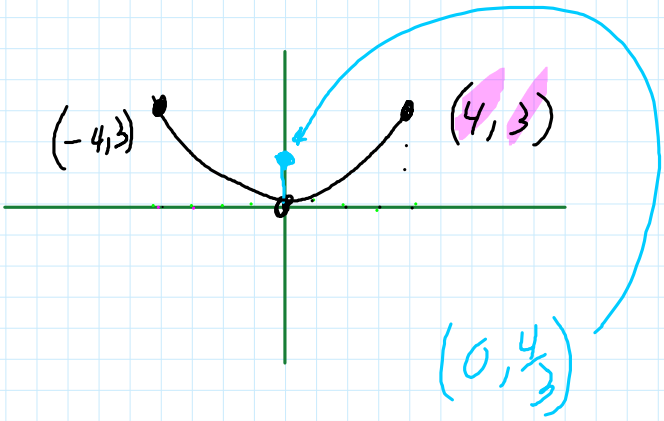


A parabolic dish is 8 ft wide and three ft deep. Find the focus (assume the form $x^2 = 4ay$)



$x^2 = 4(a)y$

$4^2 = 4(a)3$

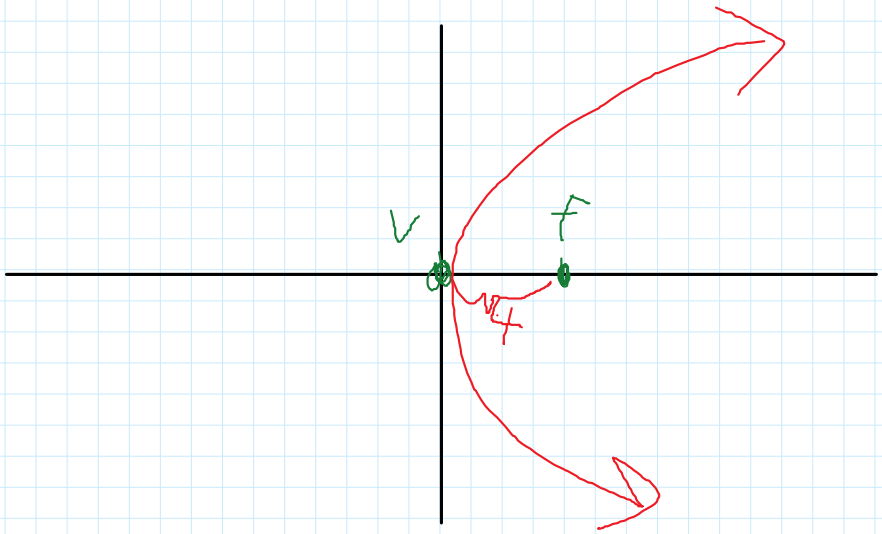
$16 = 12a$

$\frac{4}{3} = a$

10.2: 19-31 odd, 39, 43-51 odd, 57, 59, 71

19)

$V: (0,0)$ $f: (4,0)$

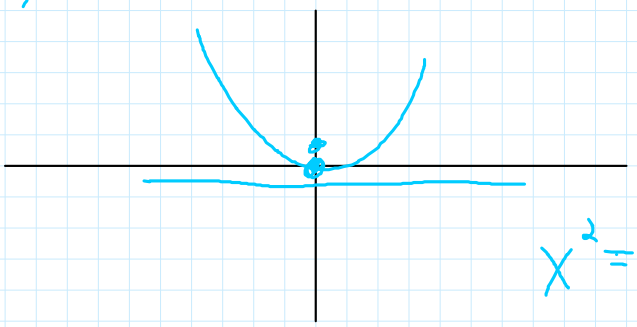


$y^2 = 4ax$

$y^2 = 4(4)x$

$y^2 = 16x$

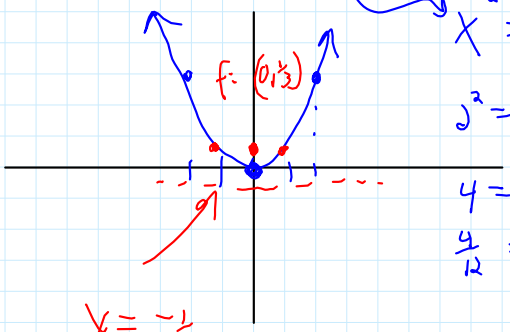
25) D: $y = -\frac{1}{2}$ V: (0,0)



$x^2 = 4ay$

27) V: (0,0) line o'symm = y-axis

contains $(2,3)$



$x^2 = 4ay$

$2^2 = 4a3$

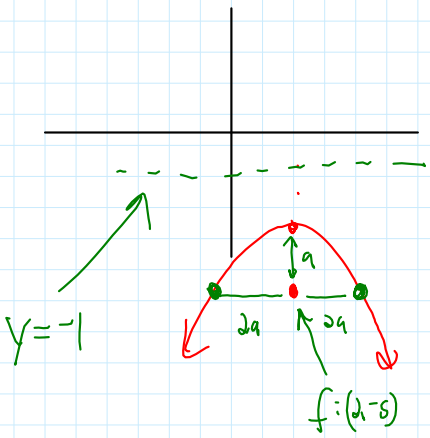
$4 = 12a$

$\frac{4}{12} = a$

$\frac{1}{3} = a$

$y = -\frac{1}{3}$

29) V: (2,-3) focus (2,-5)



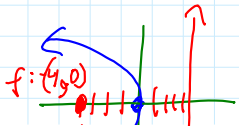
$x^2 = -4ay$

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

$x^2 = -8y$

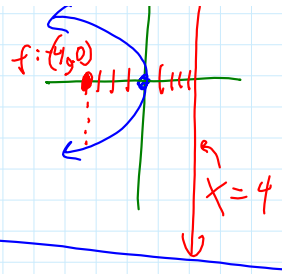
$(x-2)^2 = -8(y+3)$

30) $y^2 = -16x$



$y = -16x$

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



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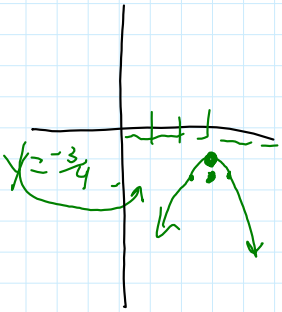
43) Vertex, focus, directrix

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

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

$(x-3)^2 = -4\left(\frac{1}{4}\right)(y+1)$



$-4a = -1$

$a = \frac{1}{4}$

V: $(3, -1)$

f: $(3, -1.25)$

D: $y = -.75$

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47) $y^2 - 4y + 4x + 4 = 0$

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

$(y-2)^2 = -4(x+0) \Rightarrow a = 1$

V: $(0, 2)$

f: $(-1, 2)$

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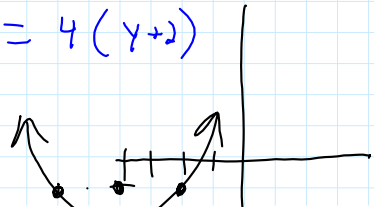
49) $(x^2 + 8x + 16) = 4y - 8 + 16$

$(x+4)^2 = 4y + 8$

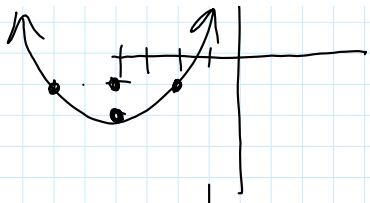
$(x+4)^2 = 4(y+2)$

C: $(-4, -2)$



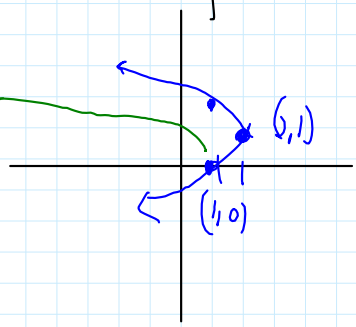
C: $(-4,-2)$

a: 1



57) $y^2 = -4ax$

$(y-1)^2 = -4a(x-2)$



$(-1)^2 = -4a(1-2)$

$1 = -4a(-1)$

$1 = 4a$

$\frac{1}{4} = a$

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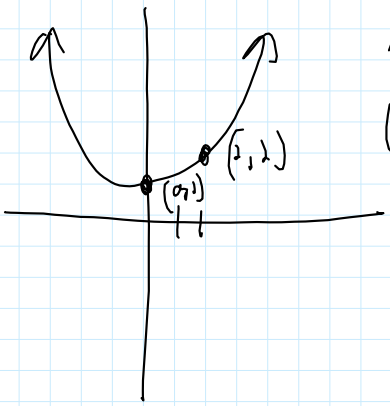
59)



$x^2 = 4ay$

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

$2^2 = 4a(2-1)$

$a = 1$

$x^2 = 4 \cdot 1 (y-1)$

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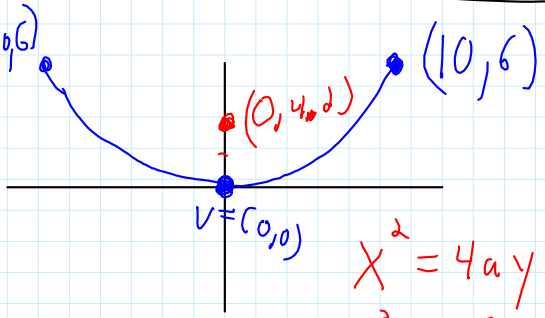
71)



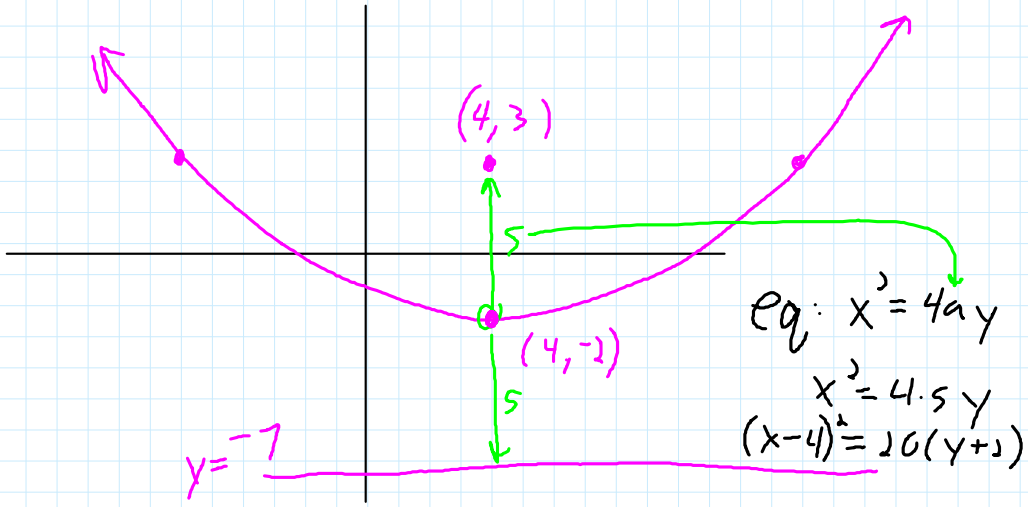
$x^2 = 4ay$

$10^2 = 4a6$

$100 = 24a$

$\frac{100}{24} = a$

$4.2 = a$



eq: $x^2 = 4ay$

$x^2 = 4.5y$

$(x-4)^2 = 20(y+3)$