Day 7 Notes

Monday, April 27, 2015 9:43 AM

Precalculus
Conics – Parabola – Day 1 Notes

Name:
Period:

What is a **PARABOLA**? All pts equidistant from a pt. and a Line (Focus, directrix)

Equation(s) of a Parabola in General Form

Up/down

$(x-h)^2 = \pm 4p(y-k)$

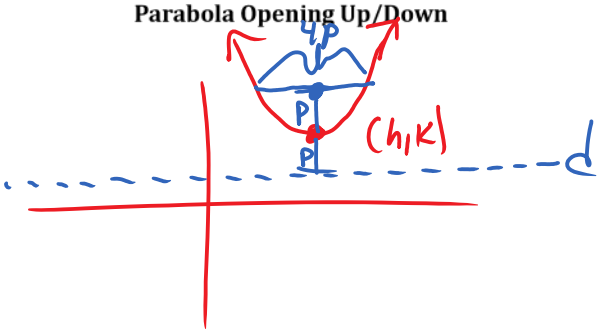
$+4p$ = opens up
$-4p$ = opens down

*Left/Right

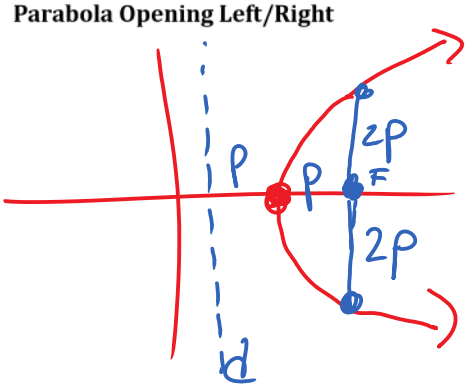
$(y-k)^2 = \pm 4p(x-h)$

$+4p \Rightarrow$ open right
$-4p \Rightarrow$ open left

Parabola Opening Up/Down



Parabola Opening Left/Right

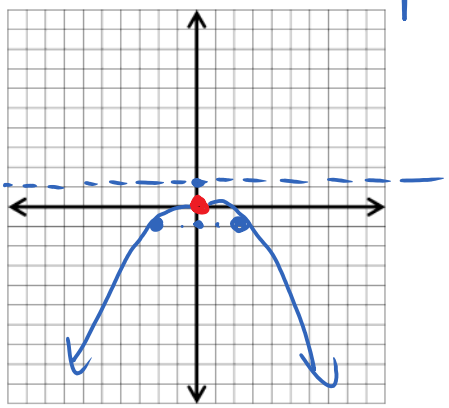


Key Features

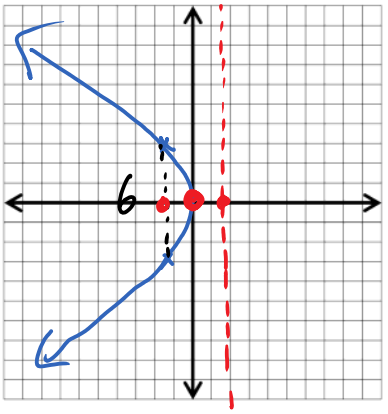
"Center"

$4p$ = focal width
F = Focus
d = directrix
Vertex = (h,k)

1. $x^2 = -4y$ $\quad 4 = 4p$ $\quad p = 1$



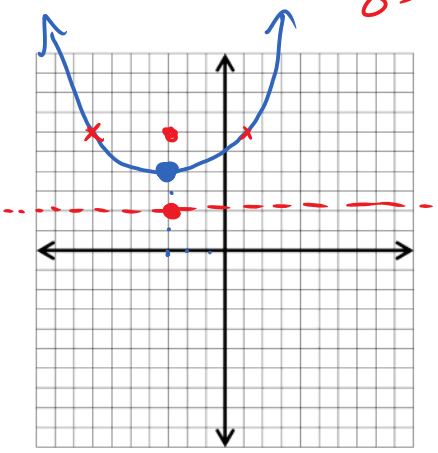
2. $y^2 = -6x$ $\quad 6 = 4p$ $\quad p = 3/2$



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

$8 = 4p$

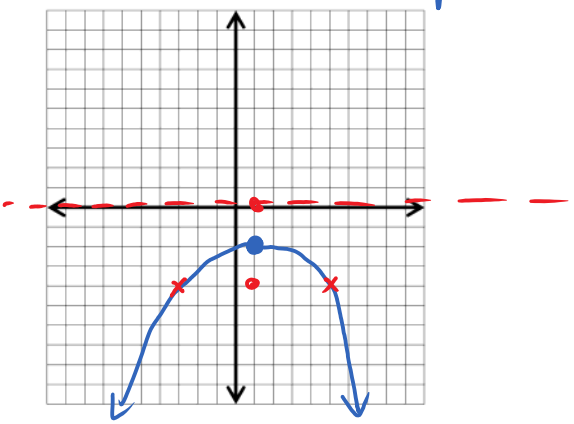
$p = 2$



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

$8 = 4p$

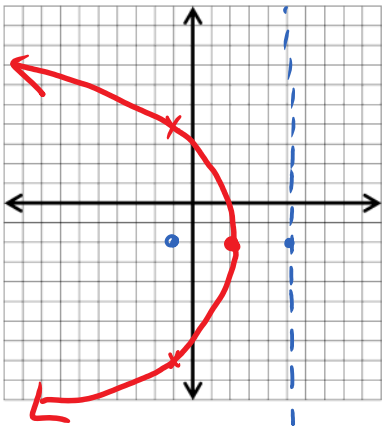
$p = 2$



5. $(y+2)^2 = -12(x-2)$

$12 = 4p$

$p = 3$

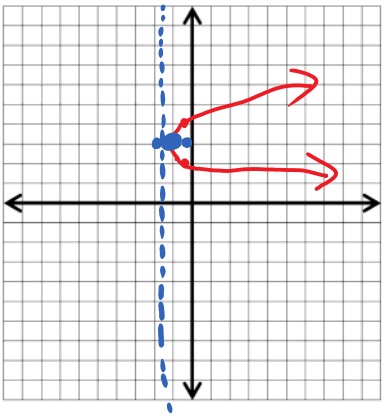


6. $(y-3)^2 = 2(x+1)$

$2 = 4p$

$p = \frac{1}{2}$

$(-1, 3)$



(#7-8) Rewrite the following parabolas in standard form by completing the square.

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

$4y = x^2 + 4x - 16$

$4 + 4y + 16 = x^2 + 4x + 4$

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

$4(y+5) = (x+2)^2$

8. $\left(x = \frac{1}{8}y^2 - y\right)8$

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

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

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