Name _____
Date _____ Mod _____

Chapter 9 Practice Worksheet
Parabolas/Ellipses/Hyperbolas

For the following parabolas, find the vertex, focus, directrix, the latus rectum (LR), and two points on end of LR (points on the parabola). Graph the parabolas.

1. $x^2 = -2y$

2. $y^2 = 4x$

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

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

5. $x^2 + 6x - 4y + 1 = 0$

6. $y^2 - 2y = 8x - 1$

For the following ellipses, find the center, vertices, and foci. Then graph the ellipses.

7. $4x^2 + 25y^2 = 100$

8. $\frac{(x-2)^2}{36} + \frac{(y+1)^2}{21} = 1$

9. $16x^2 + 25y^2 + 32x - 150y = 159$

10. Write the equation of an ellipse.
    a. focus at (-4, 0); vertices at (-5, 0) and (5, 0)
    b. vertices at (-5, 0) and (5, 0); c = 2

For the following hyperbolas, find the center, vertices, foci, and equations of the asymptotes. Then graph the hyperbolas.

11. $\frac{(y+3)^2}{4} - \frac{(x-2)^2}{9} = 1$

12. $y^2 - x^2 - 4y + 4x - 1 = 0$

13. $2y^2 - x^2 + 2x + 8y + 3 = 0$

14. Write the equation of a hyperbola.
    a. focus at (0, 6); vertices at (0, -2) and (0, 2)
    b. foci at (-4, 0) and (4, 0); asymptote the line y = -x

PRECALC - CRITICAL ASPECTS
SOLUTIONS - PRACTICE W.S. CHAPTER 9

1) V:(0,0) F:(0,-½) d: y=½ LR=2 endpts of LR (-1,-½) (1,-½)

2) V:(0,0) F:(1,0) d: x=-1 LR=4 endpts of LR (1,2) (1,-2)

3) V:(-2,-1) F:(-2.5,-1) d: x=-1.5 LR=2 endpts of LR (-2.5,0) (-2.5,-2)

4) V:(1,3) F:(1,5) d: y=1 LR=8 endpts of LR (-3,5) (5,5)

5) V:(-3,-2) F:(-3,-1) d: y=-3 LR=4 endpts of LR (-1,-1) (-5,-1)

6) V:(0,1) F:(2,1) d: x=-2 LR=8 endpts of LR (2,5) (2,-3)

7) C:(0,0) V: (-5,0) (5,0) F: $(-\sqrt{21},0)$ $(\sqrt{21},0)$

8) C:(2,-1) V:(8,-1) (-4,-1) F: $(2+\sqrt{15},-1)$ $(2-\sqrt{15},-1)$

9) C:(-1,3) V:(-6,3) (4,3) F:(2,3) (-4,3)

10) a) $\frac{x^2}{25}+\frac{y^2}{9}=1$ b) $\frac{x^2}{25}+\frac{y2}{21}=1$

11) C:(2,-3) V:(2,-1) (2,-5) F: $(2,-3\pm\sqrt{13})$ A: $y+3=\frac{\pm 2}{3}(x-2)$

12) C:(2,2) V:(2,3) (2,1) F: $(2,2\pm\sqrt{2})$ A: $y-2=\pm(x-2)$

13) C:(1,-2) V: $(1,-2\pm\sqrt{2})$ F: $(1,-2\pm\sqrt{6})$ A: $y+2=\pm\frac{\sqrt{2}}{2}(x-1)$

14) a) $\frac{y^2}{4}-\frac{x^2}{32}=1$ b) $\frac{x^2}{8}-\frac{y^2}{8}=1$