PRECALC – CHAP 9

NAME _____

MOD ____

Chapter Test

In Problems 1–3, identify each equation. If it is a parabola, give its vertex, focus, and directrix; if an ellipse, give its center, vertices, and f if a hyperbola, give its center, vertices, foci, and asymptotes.

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

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

3. $2x^2 + 3y^2 + 4x - 6y = 13$

In Problems 4–6, obtain an equation of the conic described; graph the equation by hand.

4. parabola: focus $(-1, 4.5)$, vertex $(-1, 3)$

5. ellipse: center $(0, 0)$, vertex $(0, -4)$, focus $(0, 3)$

6. hyperbola: center $(2, 2)$, vertex $(2, 4)$, contains the point $\left(2 + \sqrt{10}, 5\right)$

In Problems 7–9, identify each conic without completing the square or rotating axes.

7. $2x^2 + 5xy + 3y^2 + 3x - 7 = 0$

8. $3x^2 - xy + 2y^2 + 3y + 1 = 0$

9. $x^2 - 6xy + 9y^2 + 2x - 3y - 2 = 0$

(SKIP)

10. Given the equation $41x^2 - 24xy + 34y^2 - 25 = 0$, rotate the axes so there is no xy-term. Discuss and graph the new equa

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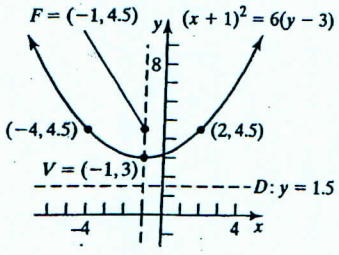
1. Hyperbola; center: $(-1, 0)$; vertices: $(-3, 0)$ and $(1, 0)$; foci: $(-1 - \sqrt{13}, 0)$ and $(-1 + \sqrt{13}, 0)$; asymptotes: $y = -\frac{3}{2}(x + 1)$ and $y = \frac{3}{2}(x + 1)$

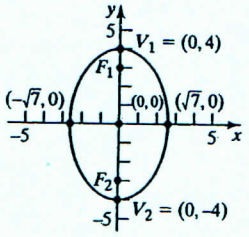
2. Parabola; vertex: $\left(1, -\frac{1}{2}\right)$; focus: $\left(1, \frac{3}{2}\right)$; directrix: $y = -\frac{5}{2}$

3. Ellipse; center: $(-1, 1)$; foci: $(-1 - \sqrt{3}, 1)$ and $(-1 + \sqrt{3}, 1)$; vertices: $(-4, 1)$ and $(2, 1)$

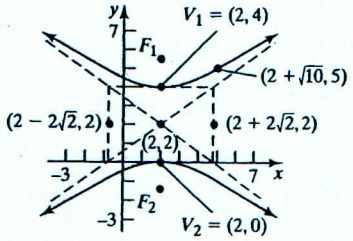
4. $(x + 1)^2 = 6(y - 3)$



5. $\frac{x^2}{7} + \frac{y^2}{16} = 1$



6. $\frac{(y - 2)^2}{4} - \frac{(x - 2)^2}{8} = 1$



7. Hyerbola **8.** Ellipse **9.** Parabola

10. This is the equation of an ellipse with center at $(0, 0)$ in the $x'y'$—plane. The vertices are at $(-1, 0)$ and the $(1, 0)$ in the $x'y'$—plane. The foci are located at $\left(\pm\frac{\sqrt{2}}{2}, 0\right)$ in the $x'y'$—plane.