Chapter 8 Review

I. Vocabulary – Know the definition of each vocabulary word below.

    a. Parabola
    b. Circle
    c. Ellipse
    d. Hyperbola
    e. Latus rectum
    f. Major axis
    g. Minor axis
    h. Transverse axis
    i. Conjugate axis

II. Identify the conic and sketch its graph. Identify all that is applicable: center, radius, focus/foci, vertex/vertices, directrix, asymptotes, and axis of symmetry.

    a. $4x^2 + 16y^2 - 8x + 96y + 84 = 0$

    b. $y^2 + 6y + 2x + 11 = 0$

    c. $x^2 - 12x + 84 = -y^2 + 16y$

    d. $y^2 - 4x^2 + 8y + 16x - 4 = 0$

    e. $2x^2 + 6x + y^2 = \dfrac{1}{2}$

    f. $16y = 4x^2 - 8x$

III. Write an equation of the conic section in standard form with the given characteristics.

    a. The circle passes through the origin and has its center at $\left(-\sqrt{13},5\right)$.

    b. The ellipse that has endpoints of the major axis are at (2,12) and (2, -4). The endpoints of the minor axis are at (4, 4) and (0, 4).

    c. The parabola with vertex $(-1, -2)$, latus rectum length 12 and opens down.

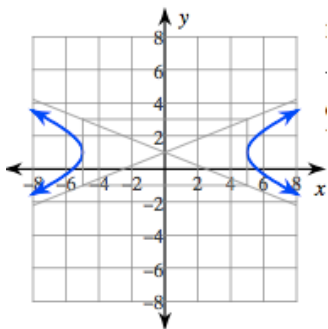   d. The parabola with directrix x = 4 and lower endpoint of the latus rectum at (8 ,1).

    e. The hyperbola with center (3, 3), vertex (1, 3) and focus (-1, 3).

    f. The hyperbola with center (0, 0) with vertices (0, 3) and (0, -3); asymptotes $y = \pm x$
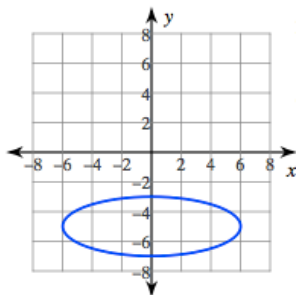
    g. The ellipse with center (3, -4); major axis length 8 and parallel to the x-axis; minor axis length 2

IV. Write the equation for each of the conics in standard form.

a.

b.

V. Find all points of intersection.

a.	b.	c.	d.
$x^2 + y^2 = 100$	$x^2 + y^2 = 34$	$3x^2 + 4x - y = 7$	$x^2 + y^2 = 9$
$y - x = 2$	$x^2 - 2y^2 = 7$	$2x - y = -1$	$y = x^2 + 3$

VI.

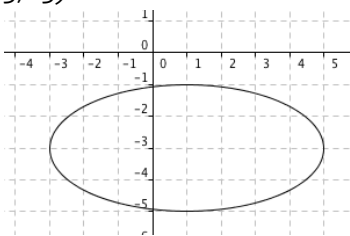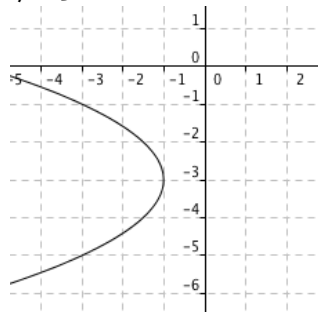| a. Sketch. Find all points of intersection. $x^2 + y^2 = 25$ $y^2 = x + 5$	b. Find the distance between the point (8,3) and the focus for $x^2 - 4x - 4y = 0$	c. Write the equation of a circle whose endpoints of a diameter are (5, 1) and (3, -2)

I.

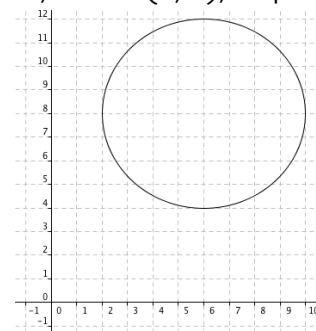| Refer to your textbook for the formal definitions. |
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II.

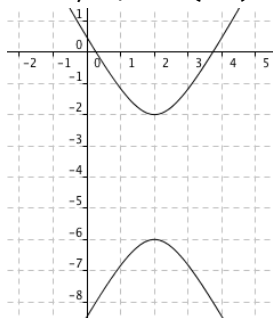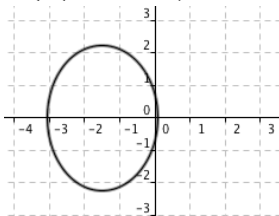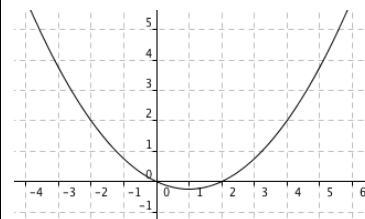| a. ellipse, center (1, -3), foci ($1 \pm 2\sqrt{3}$, -3), vertices (5, -3) & (-3, -3)	b. parabola, vertex (-1, -3), focus (-3/2, -3), directrix x=-1/2, AOS: y=-3	c. circle, center (6, 8), r=4
d. hyperbola, center (2, -4), vertices (2, -2) & (2, -6), foci (2, $-4 \pm \sqrt{5}$), asymptotes y+4= ±2(x-2)	e. ellipse, center (-3/2, 0), foci (-3/2, $\pm \dfrac{\sqrt{10}}{2}$), vertices (-3/2, $\pm\sqrt{5}$)	f. parabola, vertex (1, -1/4), focus (1, $\frac{3}{4}$), directrix y=-5/4, AOS: x=1

III.

a. $(x + \sqrt{13})^2 + (y - 5)^2 = 38$	b. $\dfrac{(x-2)^2}{4} + \dfrac{(y-4)^2}{64} = 1$	c. $(x+1)^2 = -12(y+2)$

d. $(y-5)^2 = 8(x-6)$	e. $\dfrac{(x-3)^2}{4} - \dfrac{(y-3)^2}{12} = 1$

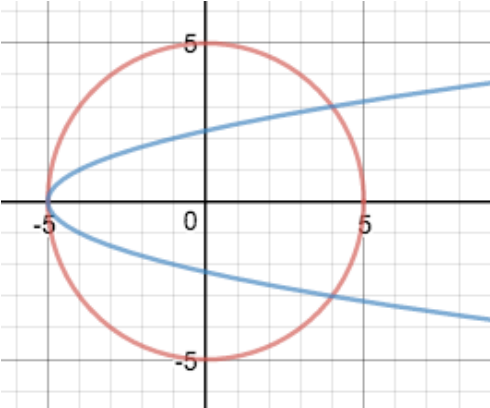| f. $\dfrac{y^2}{9} - \dfrac{x^2}{9} = 1$	g. $\dfrac{(x-3)^2}{16} + \dfrac{(y+4)^2}{1} = 1$

IV.

a. $\dfrac{x^2}{25} - \dfrac{(y-1)^2}{4} = 1$	b. $\dfrac{x^2}{36} + \dfrac{(y+5)^2}{4} = 1$

V.

a.	b.	c.	d.
(-8, -6) and (6, 8)	(5, 3), (5, -3), (-5, 3), (-5, -3)	(4/3, 11/3) and (-2, -3)	(0,3)

VI.

a.	b. $3\sqrt{5}$	c. $(x-4)^2 + \left(x+\dfrac{1}{2}\right)^2 = \dfrac{13}{4}$
 (-5,0), (4, 3), (4, -3)		