Algebra 3Assignment # 7 – Review Worksheet

- (1) Sketch a graph of each of the following. Label the center, vertices, foci, and asymptotes where appropriate.
 - (a) $x^{2} + 4x + 6y 20 = 0$ (b) $4y^{2} - 4y - 16x - 47 = 0$ (c) $16y^{2} + x^{2} - 2x - 32y + 13 = 0$ (d) $4x^{2} + 9y^{2} + 16x - 18y - 11 = 0$ (e) $9y^{2} - x^{2} + 18y = 0$ (f) $9x^{2} - 4y^{2} + 54x + 16y + 29 = 0$ (g) $16x^{2} + y^{2} - 96x + 4y + 132 = 0$ (h) $2x^{2} + 2y^{2} + 2x - 6y - 3 = 0$
- (2) Write the equation of a circle if the endpoints of a diameter are (-5, -2), and (1, 6)
- (3) Write the equation of the parabola whose focus is (-2, 5), and whose directrix is x = 4.
- (4) Write the equation of an ellipse if the endpoints of the major axis are (2, 2) and (2, −8), and one of the focus points is at (2, 0)
- (5) Write the equation of the hyperbola whose foci are (-2, 5) and (-2, -3) if the length of the transverse axis is 4.
- (6) Write the equation of the parabola whose vertex is (-3, 4), and whose focus is (1, 4).
- (7) Write the equation of an ellipse if the center is (3, 2), if the graph of the ellipse is to be tangent to the coordinate axes.
- (8) Write the equation of the hyperbola whose vertices are (7, 3) and (1, 3) if the slopes of its asymptotes are $\pm \frac{4}{3}$.

Answers

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(1) (a) $(x + 2)^2 = -6(y - 4)$	(e) $\frac{(y+1)^2}{1} - \frac{x^2}{9} = 1$
(b) $\left(y - \frac{1}{2}\right)^2 = 4(x + 3)$	(f) $\frac{(x + 3)^2}{4} - \frac{(y - 2)^2}{9} = 1$
(c) $\frac{(x - 1)^2}{4} + \frac{(y - 1)^2}{(1/4)} = 1$	(g) $\frac{(x - 3)^2}{1} + \frac{(y + 2)^2}{16} = 1$
(d) $\frac{(x+2)^2}{9} + \frac{(y-1)^2}{4} = 1$	(h) $\left(x+\frac{1}{2}\right)^2 + \left(y-\frac{3}{2}\right)^2 = 4$
(2) $(x+2)^2 + (y-2)^2 = 25$	
(3) $(y-5)^2 = -12(x-1)$	
(4) $\frac{(x-2)^2}{16} + \frac{(y+3)^2}{25} = 1$	
(5) $\frac{(y-1)^2}{4} - \frac{(x+2)^2}{12} = 1$	
(6) $(y - 4)^2 = 16(x + 3)$	
(7) $\frac{(x-3)^2}{9} + \frac{(y-2)^2}{4} = 1$	
(8) $\frac{(x-4)^2}{9} - \frac{(y-3)^2}{16} = 1$	