

Analytic Geometry (12<sup>th</sup>)

SCHOOL \_\_\_\_\_

*Give exact answers in radicals, or fractions in lowest form; no decimal approximations.*

- \_\_\_\_\_ 1. Find the equation in slope intercept form of the perpendicular bisector of the segment with end points  $A(5, -2)$  and  $B$
- \_\_\_\_\_ 2. Find the length of the longest side of the triangle whose vertices are  $A(-2, -1)$ ,  $B(0, 7)$ , and  $C(3, 2)$ .
- \_\_\_\_\_ 3. Find equation of the line in slope-intercept form that contains the point  $P(4, 7)$  and is parallel to the line  $3x + y + 1 = 0$ .
- \_\_\_\_\_ 4. Find the area of the circle  $x^2 + y^2 + 4x - 6y + 4 = 0$ . Leave the answer in terms of  $\pi$ .
- \_\_\_\_\_ 5. Find the coordinates of the points of intersection of the line  $x + y = 1$  and the ellipse  $3x^2 + y^2 = 3$ .
- \_\_\_\_\_ 6. The graph of the ellipse  $4(x + 4)^2 + 9(y + 2)^2 = 36$  is rotated  $90^\circ$  counterclockwise about its center. Find an equation of the ellipse after applying this rotation.
- \_\_\_\_\_ 7. Find the maximum value of the function  $f(x) = -16x^2 + 256x + 100$ .
- \_\_\_\_\_ 8. Find the distance from the intersection of  $x + y - 1 = 0$  and  $2x - y = 0$  to the center of the ellipse
- \_\_\_\_\_ 9. Find an equation of each asymptote of the graph of  $y = \frac{5x^2 - 10}{10x^2 - x - 3}$ .
- \_\_\_\_\_ 10. Find an equation in standard form of the parabola that opens upward, has vertex at  $(5, -9)$ , and passes through the point  $(10, 8)$ .
- \_\_\_\_\_ 11. Find the area of the triangle bounded by the lines  $y = -2$ ,  $2x - y + 4 = 0$  and  $x + y - 4 = 0$ .
- \_\_\_\_\_ 12. Find an equation of the hyperbola in standard form that has vertices at  $(-3, 0)$  and  $(3, 0)$  and foci at  $(-5, 0)$  and  $(5, 0)$ .