Test Form D **Name** _____ **Date** _____

Chapter 10 **Class** _____ **Section** _____

1. Find the standard form of the equation for the parabola with vertex (4, 0) and passing through the point (1, 2).

2. Write the equation in standard form and sketch its graph: $4y^2 - x^2 - 8y - 4x = 16$.

3. Write an equation for the tangent line to the ellipse $x^2 + 4y^2 = 8$ at the point $(-2, 1)$.

4. Sketch the curve represented by the parametric equations $x = 4 \sin \theta$ and $y = 3 \cos \theta$.

5. Find the corresponding rectangular equation by eliminating the parameter: $x = t^2 - 1, y = t + 2$.

6. Find the corresponding rectangular equation by eliminating the parameter: $x = 2 + \sec \theta, y = 1 + \tan \theta$.

7. Find the parametric equation for y if $x = e^t$ for the line passing through the points (2, 1) and $(-2, 3)$.

8. Find $\dfrac{dy}{dx}$ for the curve given by $x = 2 \cos \theta$ and $y = 2 + \sin \theta$.

9. Find the equation of the tangent line for the curve represented by $x = \sqrt{t}$ and $y = \frac{1}{2}t^2$ at the point where $t = 4$.

10. Find $\dfrac{d^2y}{dx^2}$ for the curve given by $x = t^3 + 2$ and $y = t^2 + t$.

11. Calculate the length of the arc of the curve given by $x = \frac{8}{3}t^{3/2}$ and $y = 2t - t^2$ between $t = 1$ and $t = 3$.

12. Sketch the polar point: $\left(-3, \dfrac{\pi}{3}\right)$.

13. Find the corresponding rectangular coordinates for the polar point $\left(-2, \dfrac{7\pi}{6}\right)$.

14. Convert the rectangular equation $2y - 3x = 2$ to polar form.

15. Convert the polar equation $r = 3 \cos \theta$ to rectangular form.

16. Find the value(s) of θ that give relative extrema of the function $r = 1 + 2 \sin \theta$.

17. Sketch a graph of $r = 3 \sin 2\theta$.

18. Calculate the area inside one petal of $r = 2 \cos 3\theta$.

19. Find the value(s) of θ at the points of intersection of $r = 5 \sin \theta$ and $r = 2 + \sin \theta$.

20. Determine the values of t at which the curve is concave downward: $x = t^2 + t, y = t^3 - 3t - 1$.