ColumnPointsScore110		<b>n</b> •	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
214312414Total50Instructions:1. Deall of your work in this booklet.2. Show all of your steps in problems for full credit.3. Be clear and neat in your work. Any illegible work, or scribbling in the margins, will not be graded.4. Place your answers in a box.5. If you need more space, you may use the back of the page and write Or back Page # in the problem space.1. Special Curves. (10 pts) for each equation indicate the type of graph you would expect from the list:(A) Line(B) Parabola(D) Circle (c) Ellipse(F) Hyperbola(G) Cardiod(H) Cycloida. $4x^2 - 9y^2 = 36$	Column	Points	Score	<b>2. Slippery Slopes</b> . (8 pts) Consider the curve
312414Total50Instructions:11. Do all of your work in this booklet.2. Show all of your steps in problems for full credit.3. Be clear and meat in your work. Any illegible work, or scribbling in the margins, will not be graded.4. Place your answers in a box.5. If if you need more space. You may use the back of the page and write On back Page # in the problem space.1. Special Curves. (10 pts) for each equation indicate the type of graph you would expect from the list:(A) Line(B) Parabola(C) Cardiod(P) Hyperbola(G) Cardiod(P) Hyperbola(H) $r = 1 + \cos t$				$x = 1 + 3t^2$ , $y = 4 + 2t^3$ with $0 \le t \le 1$ .
414Total30Instructions:1. Do all of yoar work in this booklet.2. Show all of yoar steps in problems for full credit.3. Be clear and neat in your work. Any illegible work, or scribbling in the margins, will not be graded.4. Place your answers in a box.5. If you need more space, you may use the back of the page and write On back Page # in the problem space.1. Special Curves. (10 pts) for each equation indicate the type of graph you would expect from the list:(A) Line(B) Parabola(C) Cartei(C) Rose (D) Circle(D) Circle(D) Ellipse (P) Hyperbola(G) Cardiod(C) Rose (P) Hyperbola(G) Cardiod(C) Rose (P) Hyperbola(G) Cardiod(C) Rose (P) Hyperbola(G) Cardiod(C) Rose (P) Hyperbola(a. $4x^2 - 9y^2 = 36$ b. $r = 3cos2q$ c. $r = 1+cost$ f. $x = 1-t$ , $y = 5t-1$ g. $x = cos3$ , $y = sin5^{\circ}$ i. $x = q - sin q$ , $y = 1-cos q$ j. $r = 4sin q$ b. Convert $(r,q) = (2, -\frac{7p}{6})$ to Cartesian coordinates.c. Convert $(x,y) = (3, -3\sqrt{3})$ to polar coordinates.				What point $(x, y)$ corresponds to $t = \frac{1}{2}$
Total50Instructions:Instructions:1. Do all of your work in this booklet.2.2. Show all of your work in this booklet.3.3. Be clear and reat in your work. Any illegible work, or scribbling in the margins, will not be graded.4.4. Place your answers in a box.5.5. If you need more space, you may use the back of the page and write On back Page # in the problem space.1. Special Curves. (10 pts) for each equation indicate the type of graph you would expect from the list:(A) Line (B) Parabola (C) Rose(D) Cardiod (H) Cycloida. $4x^2 - 9y^2 = 36$ (b. $r = 3\cos 2q$ (c. $x = 2\sin q, y = 3\cos q$ (d. $x = 2t - 1, y = 3 - t^2$ (e. $x = 2\sin q, y = 3 - t^2$ (f. $x = 1 - t, y = 5t - 1$ (g. $x = \cos 5, y = \sin 5t$ (h. $r = \frac{6}{1-2\sin q}$ (i. $x = q - \sin q, y = 1 - \cos q$ (j. $r = 4\sin q$				a. what point $(x, y)$ corresponds to $t = \frac{1}{2}$
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b. $r = 3\cos 2q$	graph you would expe (A) Line (B) Para (D) Circle (E) Ellip	ct from the abola se	list: (C) Rose	
c. $x = 2\sin q$ , $y = 3\cos q$ d. $x = 2t-1$ , $y = 3-t^2$ e. $r = 1+\cos t$ f. $x = 1-t$ , $y = 5t-1$ g. $x = \cos 5$ , $y = \sin 5t$ h. $r = \frac{6}{1-2\sin q}$ i. $x = q - \sin q$ , $y = 1 - \cos q$ j. $r = 4\sin q$ Bonus – Give the <i>exact</i> equation for the length of the curve b. Convert $(x, y) = (3, -3\sqrt{3})$ to polar coordinates.	a. $4x^2 - 9y^2 = 36$			c. What is the length of this curve?
d. $x = 2t - 1$ , $y = 3 - t^2$ e. $r = 1 + \cos t$ f. $x = 1 - t$ , $y = 5t - 1$ g. $x = \cos \mathfrak{H}$ , $y = \sin \mathfrak{H}$ h. $r = \frac{6}{1 - 2\sin q}$ i. $x = q - \sin q$ , $y = 1 - \cos q$ j. $r = 4\sin q$ Bonus - Give the <i>exact</i> equation for the length of the curve distribution of the curve distribution of the length of the curve distrelength of the curve distrelength of the curve	_			
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h. $r = \frac{6}{1-2\sin q}$ 3. Conversions. (6 pts)i. $x = q - \sin q, y = 1 - \cos q$ j. $r = 4\sin q$ Bonus – Give the <i>exact</i> equation for the length of the curveb. Convert $(x, y) = (3, -3\sqrt{3})$ to polar coordinates.				
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<b>Bonus</b> – Give the <i>exact</i> equation for the length of the curve b. Convert $(x, y) = (3, -3\sqrt{3})$ to polar coordinates.	i. $x = \boldsymbol{q} - \sin \boldsymbol{q}, y = 1 - $	cos <b>q</b>		
<b>Bonus</b> – Give the <i>exact</i> equation for the length of the curve	j. $r = 4\sin q$			
		et equation	for the length of the curve	b. Convert $(x, y) = (3, -3\sqrt{3})$ to polar coordinates.

4. Conics. (12 pts)	<b>5. Polar Fun. (9 pts)</b> Consider the curve $r = 2\sin 2q$ , $0 \le q \le 2p$ .
a. Put the conic $4x^2 - 16x + y^2 + 2y + 5 = 0$ into standard form.	a. Where does the curve cross itself ?
Describe the type and orientation of the conic.	
	b. Sketch the curve (neatly).
b. Sketch the conic $25(x-2)^2 - 4y^2 = 100$ .	
b. Sketch the conic $23(x-2) = 4y = 100$ .	
	c. Find the area of one of the loops in the curve
c. Rewrite the conic equation $9r - 6r \cos q = 4$ in the general	
Cartesian form $Ax^2 + By^2 + Cx + Dy + E = 0$ .	
	<b>6. Polar Conic. (5 pts)</b> Consider the conic $r = \frac{4}{9-6\cos q}$
	a. What is the eccentricity?
	b. Find the equation of the directrix.
	c. What type of conic is it?