Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Polar Calculus

Use one complete closed-curve trace or the stated fixed spiral interval. Show x(theta), y(theta), and their derivatives for slopes; write area and arc-length integrals with correct bounds.

1. **For r = 8 cos(3theta), find or set up arc length for one petal. Use -pi/6 <= theta <= pi/6 for one petal.**

numbered radial scale

2. **For r = 9(1 + cos(theta)), find dy/dx at theta = pi/2 and classify the tangent. Use exact values.**

Use exact values unless numeric answer form is selected.

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3. **For r = 10 cos(theta), find the area swept by one complete trace. Use 0 <= theta <= pi.**

numbered radial scale

4. **For r = 1 + 11 cos(theta), find or set up arc length over the requested nonrepeating trace. Use 0 <= theta <= 2pi.**

numbered radial scale

Use exact values unless numeric answer form is selected.

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Polar Calculus

Use one complete closed-curve trace or the stated fixed spiral interval. Show x(theta), y(theta), and their derivatives for slopes; write area and arc-length integrals with correct bounds.

5. **For r = 12theta, find dy/dx at theta = pi/2 and classify the tangent. Use exact values.**

6. **For r = 2(1 + cos(theta)), find the area swept by one complete trace. Use 0 <= theta <= 2pi.**

numbered radial scale

Use exact values unless numeric answer form is selected.