Analysis H – Hahn / Hlasek / Tantod
Unit 3 Quiz 1 – Polar graphing
NO CALCULATORS

24

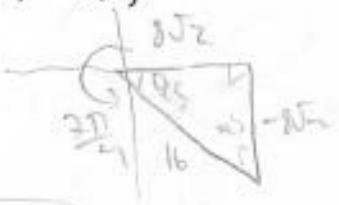
24 points

Andersen loves Analysis, for richler or polar

Period: 6

1. Convert the rectangular points to polar coordinates with positive r and $0 \le \theta < 2\pi$. [2 pts each]

a) $(8\sqrt{2},\ -8\sqrt{2})$



$(16, \frac{7\pi}{4})$ ✓

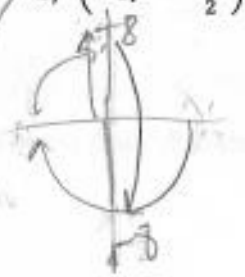
b) $(-7\sqrt{3},\ 0)$

$(7\sqrt{3}, \pi)$ ✓

2. Convert the polar points to rectangular coordinates. [2 pts each]

a) $\left(9,\ \frac{7\pi}{6}\right)$ $(-4.5\sqrt{3}, -4.5)$ ✓

b) $\left(-8,\ -\frac{27\pi}{2}\right)$



$(0, -8)$ ✓

3. Convert the polar equation to rectangular. Give your answers in the form of y as a function of x. [2 pts each]

a) $13 = \cot\theta$

$13 = \frac{\cos\theta}{\sin\theta}$

$13 = \frac{r\cos\theta}{r\sin\theta}$

$13 = \frac{x}{y}$

$y = \frac{x}{13}$ ✓

b) $r = 7$

$r^2 = 49$

$x^2 + y^2 = 49$

$y^2 = 49 - x^2$

$y = \pm\sqrt{49 - x^2}$ ✓

$x^2 + y^2 = r^2$

$r\cos\theta = x$

$r\sin\theta = y$

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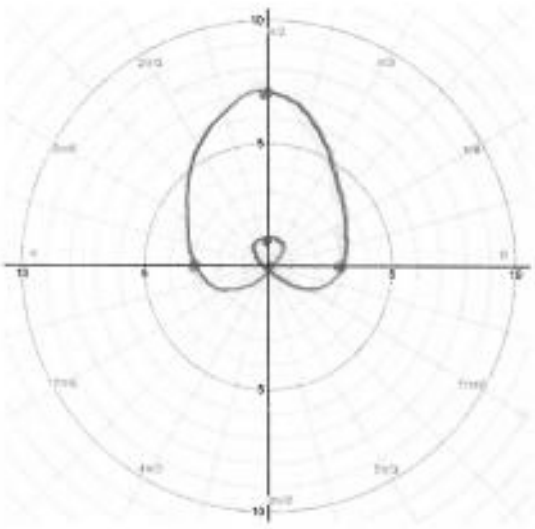
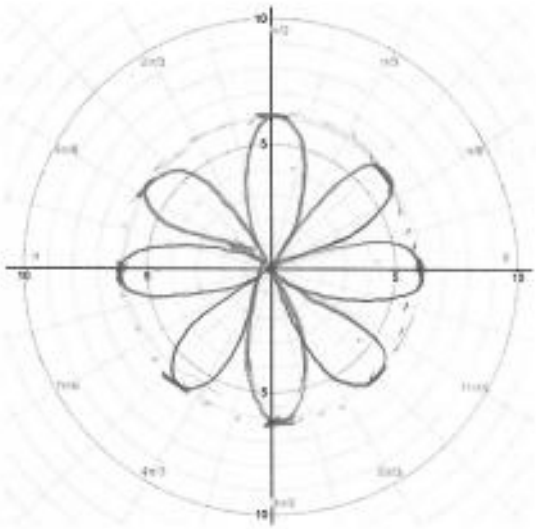
4. Graph each equation. Then classify each graph according to its most specific name. [2 for graph, 1 for name]

a) $r = 3 + 4\sin\theta$



Name: inner loop limaçon ✓

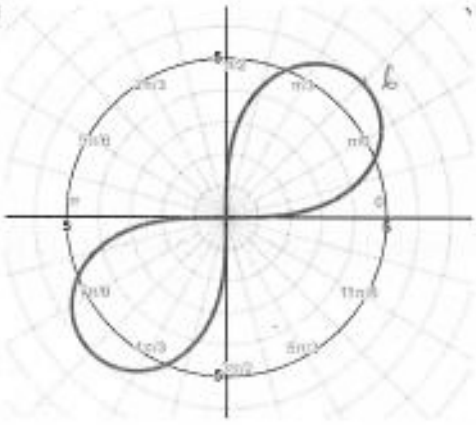
b) $r = 6\cos 4\theta$



Name: rose curve ✓

5. Write the equation of each graph. Then classify each graph according to its most specific name. [2 for equation, 1 for name]

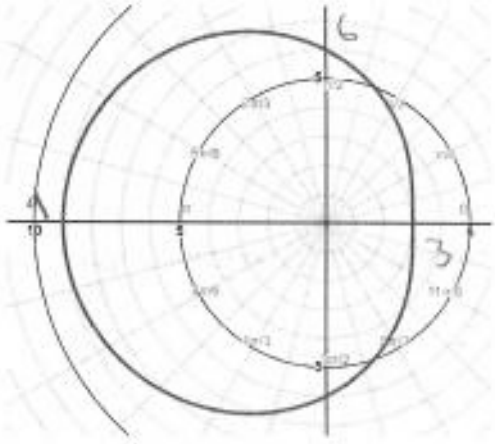
a)



Equation: $r^2 = 36\sin 2\theta$ ✓

Name: lemniscate ✓

b)



Equation: $r = 6 - 3\cos\theta$ ✓

Name: convex limaçon ✓

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