**Which polar coordinates represent the same point as (3, π/3)?**

1. (a) (3, 7π/3) (b) (3, -π/3) (c) (-3, 4π/3) (d) (3, -2π/3) (e) (-3, -2π/3) (f) (-3, -π/3)

**Change the polar coordinates to rectangular coordinates.**

1. (3, π/4) 3. (-1, 2π/3) 4. (8, -2π/3) 5. (-3, 5π/3)

**Change the rectangular coordinates to polar coordinates with r>0 and 0 ≤ θ ≤ 2π.**

6. (-1, 1) 7. (-2, -2) 8. (7, -7) 9. (5, 5)

**Find a polar equation that has the same graph as the equation in x and y.**

10. x = -3 11. x2 + y2 = 16 12. y2 = 6x 13. x + y = 3

14. 2y = -x 15. y2 – x2 = 4 16. (x-1)2 + y2 = 1

**Find an equation in x and y that has the same graph as the polar equation. Use it to sketch the graph in a rθ-plane.**

1. r cos θ = 5 2. r – 6 sin θ = 0 3. θ = π / 4

4. r2(4 sin2 θ – 9 cos2 θ) = 36 5. r2 cos 2θ = 1 6. r(sinθ – 2cosθ) = 6

**Sketch the graph of the polar equation.**

7. r = -2 8. θ = -π/6 9. r = 3 cos θ 10. r = 4 cosθ + 2 sinθ