

Topics in Homeworks

- Find polar coordinates of points. 10.3: 1,3.
- Plot regions in polar coordinates. 10.3: 7,9,11.
- Find Cartesian equation of polar curves. 10.3: 15, 16, 17, 18, 19, 20.
- Sketch curve from polar equation. 10.3: 29, 33, 35, 43, 45.
- Find tangent line at a point. 10.3: 57, 60.
- Solve for horizontal tangents. 10.3: 63.
- Area inside polar curve. 10.4: 1, 3, 9, 11, 17.
- Length of polar curve. 10.4: 45, 47
- Plotting point/line/spheres in Cartesian coordinates, 12.1: 1, 3, 5, 7, 10, 11, 12
- Equation of spheres in Cartesian coordinates. 13, 15, 16, 19a-b [maybe he meant 21a-b], 22.
- Adding vectors, drawing vectors. 12.2: 1a-d, 5, 13, 14, 15, 18, 19, 32.
- Finding unit vectors of the same direction. 12.2: 24, 25, 26, 27, 41.
- Word problem with vectors. 12.2: 35.

Problems

► **10.3 Exercise 58** Find the tangent line of $r = \cos(\theta/3)$ at $\theta = \pi$.

► **10.4 Exercise 18** Find the area enclosed by one loop of $r^2 = 4 \cos 2\theta$.

► **10.4 Exercise 46** Find the length of the curve $r = 5^\theta, 0 \leq \theta \leq \pi$

► What point is $(4, 5, -3)$?

What point is $2 \cdot (0, 0, 1) + 6 \cdot (0, 1, 0) + (-3) \cdot (1, 0, 0)$?

What unit vector is parallel to $2 \cdot (0, 0, 1) + 6 \cdot (0, 1, 0) + (-3) \cdot (1, 0, 0)$?

► **12.1 Exercise 14** Find an equation of the sphere with center $(2, -6, 4)$ and radius 5. Describe its intersection with each of the coordinate planes.

► **12.1 Exercise 23** Find equations of the spheres with center $(2, -3, 6)$ that touch (a) the xy-plane, (b) the yz-plane, (c) the xz-plane.