Analysis H – Hahn / Tantod
Unit 2 – Polar and 3D graphing   **23 points**
Quiz on Polar Coordinates and Graphing
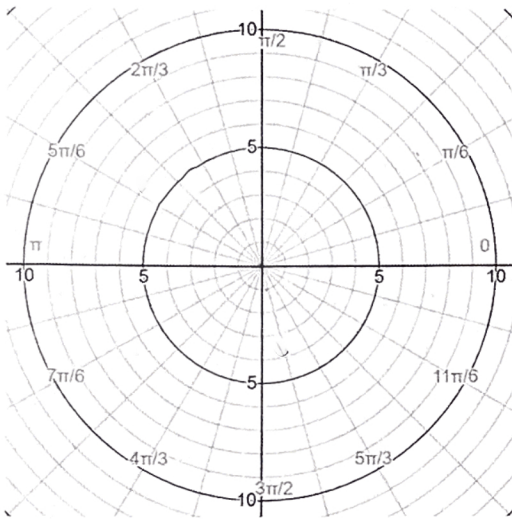NO CALCULATORS

Polar vaulter: _____
Period: _____

1. Find the 14th term of the expansion of $(x - 3y)^{41}$. [3 pts]
(leave your answer in choose notation and exponents – do NOT try to multiply it out, obvi.)

2. a) Use the polar axis below to graph and label the points $A(4, \frac{3\pi}{4})$, $B(-5, \frac{11\pi}{6})$, and $C(3, \frac{31\pi}{2})$ [1 pt each]
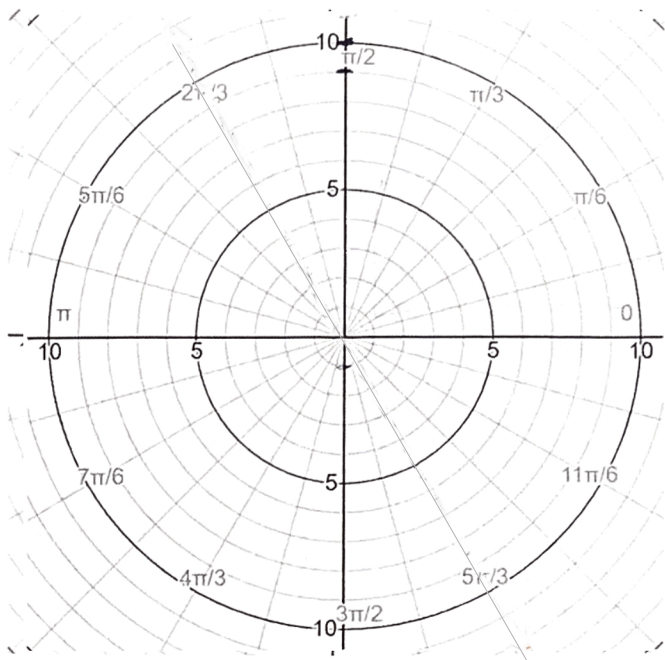

b) Convert the point $B(-5, \frac{11\pi}{6})$ to rectangular coordinates. [2 pts]

c) The point $D(24, -24)$ is written in rectangular coordinates. Convert the point to polar. [2 pts]
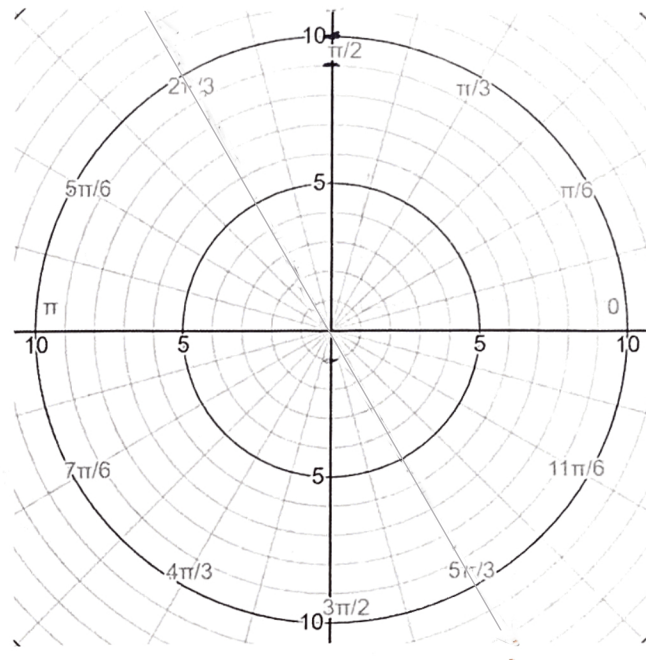
3. Convert the equation $8 = r \sec\theta + 6\tan\theta$ to a rectangular form (hint: it makes a circle! Complete the squares to write the equation in its best form.) [4 pts]

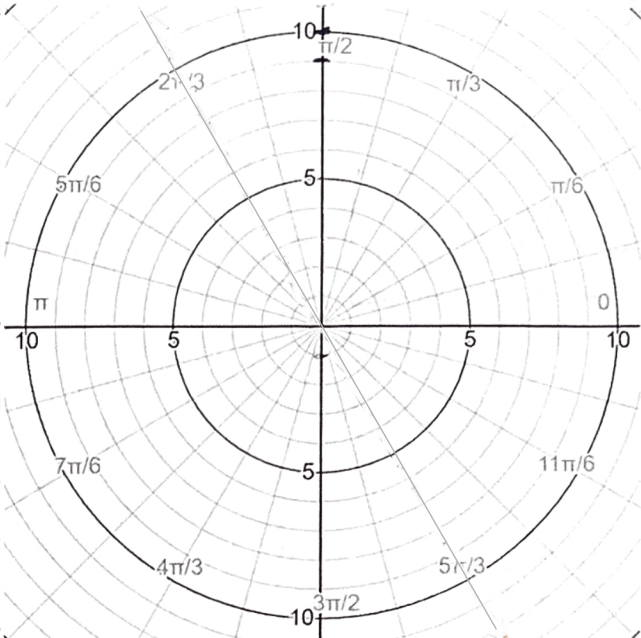4. Graph each function. [2 pts each for a and b, 3 pts each for c and d]
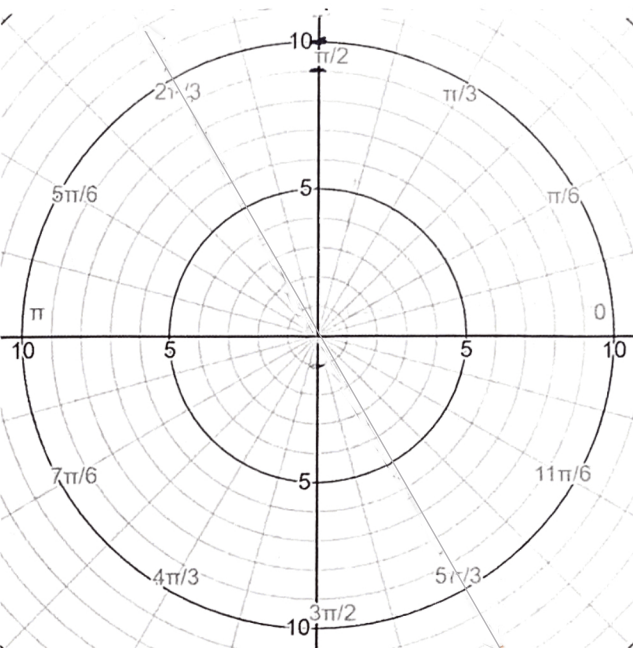
a) $r = 6$

b) $\theta = \frac{2\pi}{3}$

c) $r = 7\cos(3\theta)$

d) $r = 5 - 7\cos\theta$

5. Write the equation of a dimpled limacon, where the maximum r-value is 10, the minimum r-value is 1, and the graph has symmetry about the line $\theta = \frac{\pi}{2}$ [1 pt]