Analysis – Semester 1 Exam REVIEW SHEET 1

True or False

- 1. The numbers 10, 1, -0.1, -0.01, .001, .0001 are six terms of a geometric sequence.
- 2. The 98th term of the arithmetic sequence that begins with -4, -1, 2, ... is 286.
- 3. $r = 3\sin\theta$ has a rose leaved curve as its graph.
- 4. $(r, \theta + 2\pi)$ and $(-r, \theta + \pi)$ are polar coordinates of the same graph.
- 5. The graph of $y = \frac{x^2 9}{x^2 16}$ has two vertical asymptotes and two horizontal asymptotes.

6. A rectangular equation of the curve whose polar equation is $r + 2\sin\theta = 0$ is $x^2 + (y+1)^2 = 1$.

7. The curve with parametric equations $x = 2 + \tan \theta$ and $y = -3 - \sec \theta$, $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$, is an ellipse.

8. The point (3,-3) is on the graph of $x = 3 + \frac{1}{t}$, $y = -3 + \frac{1}{t}$.

9. $\vec{v} \cdot \vec{v} = \vec{v} \times \vec{v}$ iff $\vec{v} = \vec{0}$.

10. The pair of numbers $\frac{7}{4\sqrt{10}}$ and $\frac{-11}{4\sqrt{10}}$ are direction cosines of some line in the plane.

- 11. $\left|3\left(\vec{i}+\vec{j}\right)\right|=6$
- 12. The distance between (-1,0,2) and (1,2,4) is $2\sqrt{3}$.
- 13. If $\vec{u} = \sqrt{2}\vec{i} \vec{j} + \vec{k}$ and $\vec{v} = \vec{i} + \sqrt{2}\vec{j} + \vec{k}$, then $\vec{u} \cdot \vec{v} = 2\sqrt{2} + 1$.
- 14. The planes 2x+4y-3z+12=0 and x+y+2z+4=0 are perpendicular.
- 15. If $\vec{a} = \vec{i} + \vec{j} \vec{k}$ and $\vec{b} = 2\vec{i} \vec{j} \vec{k}$ then $\vec{a} \times \vec{b} = -3\vec{j} + 3\vec{k}$.