

Repeating ... homework in this course will come in three parts:

(i) Ungraded homework, for which the answers may be in the back. These are assigned and will not be graded, but may well appear on the exams. I will write up solutions for these. It is up to you whether you put these problems on the homework you turn in.

(ii) Graded homework – the sort of stuff you’re used to.

(iii) Bonus homework. There are a few graduate students in the class who wish to take it for 1.00U credit, rather than .75U credit. For those students, these problems are required. For undergrads and for grads taking the course for .75U, they are optional. You **may** substitute one of them for one of the problems in (ii).

1. – (ungraded) p.64 – 1.

2. – (ungraded) p.74 – 1.

3. – (graded) p.64 – 2.

4. – (graded) p.64 – 10a. (Hint: if  $\alpha(t)$  lies on a sphere with center  $\mathbf{c}$  and radius  $r$ , then  $\|\alpha(t) - \mathbf{c}\|^2 = r^2$ .)

5. – (graded) p.74 – 2. (You may use the formula for  $s$  from the solution to HW1 #2.)

6. – (graded) p.74 – 4.

7. – (graded) Compute the curvature of the plane curve  $x^4 + y^4 = 2$  at the points  $(1, 1)$  and  $(0, 2^{1/4})$ . See bottom of sheet for a graph.

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8. – (bonus) p. 64 – 6.

9. – (bonus) p. 76 – 11a.