Practice Quiz II

1. Let *R* be the region bounded by the line y = x + 6 and the parabola y = x2. Assume that *R* is rotated about the line x = - 6. Using the method of shells, write an integral that expresses the volume of the solid of revolution generated by *R*. Do not evaluate the integral. Sketch!

2. Sketch the region in the first quadrant bounded by the x-axis, the y-axis, the line  and the curve . This region is rotated about the y-axis. Using the *shell method*, write a definite integral that expresses the volume of this solid of revolution. You *need not* evaluate this integral.

3. Let R be the region bounded by y = 2x2 – x3 and y = 0. Find the volume obtained by rotating R about the y–axis.

4. The following integral represents the volume of a solid of revolution. Describe the solid.



5***.*** The region bounded by the curves y = sin2 x, y = sin4 x, for 0 ≤ x ≤  is rotated about the axis x = . Find the volume of the solid using shells. Sketch!

6. Find a parameterization of the circle centered at C = (7, 11) that has

radius equal to 4. Choose the *clockwise* direction.

7. How many *complete cycles* will Charlotte make if she lives on the following parameterized curve: x(t) = 5 cos 20 y(t) = 5 sin 20 where 0 ≤ t ≤ 1?

8. Find a parameterization of the line segment beginning at P = (-3, 4) and terminating at Q = (9, 9).

9. Sketch and identify the curve defined by the parametric equations:

x(t) = 1 + 13 cos t, y = 3 + 13 sin t, where 0 ≤ t ≤ ?

10. Parameterize *one cycle* of the curve y = sin 14x.

11. Sketch (using a table) the curve defined by the parametric equations:

x(t) = t cos t, y(t) = t sin t, t > 0

12. Sketch and identify the curve defined by the parametric equations:

x(t) = t2 – t, y(t) = 3t – 1

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| http://upload.wikimedia.org/wikipedia/commons/thumb/c/c9/Lissajous_curve_9by8.svg/600px-Lissajous_curve_9by8.svg.png | [Lissajous figure](http://www.britannica.com/EBchecked/topic/343305/Lissajous-figure) parameterized by x(t) = 4 sin (9t), y(t) = 7 sin (8t + /2), where 0 ≤ t ≤ 2  |

*The limits of my language are the limits of my world.*

- Wittgenstein, [**Tractatus Logico-Philosophicus**](http://en.wikipedia.org/wiki/Tractatus_Logico-Philosophicus)