AP Calculus AB Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lesson 8-3: Extra Disk and Washer Practice Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Directions: (1) You may graph the regions on your calculator.*

*(2) Set-up all definite integrals*

*(3) Evaluate some of them by hand for practice; others just use your calculator*

*(4) Check your answers – answers to all problems are given in parenthesis.*

1. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = 6, *y* = 0, *x* = 0, and *x* = 4 about: (a) the *x*–axis ***(452.389)*** and (b) *y*–axis ***(301.593)***

2. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = *x*, *y* = 0, and *x* = 2 about: (a) the *x*–axis ***(8.378)*** and (b) *y*–axis ***(16.755)***

3. Find the volume of the solid of revolution generated by revolving the region bounded by *y* =  and *y* = 0 about the *x*–axis. ***(4.189)***

4. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = *x*2 and *y* = 4 about the *x*–axis. ***(160.850)***

5. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = 1 – *x*, *y* = 0, and *x* = 0 about: (a) the *x*–axis ***(1.047)***, (b) the *y*–axis ***(1.047)***, and (c) the line *y* = –1. ***(4.189)***

6. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = *x*, *y* = 0, and 2 < *x* < 4 about: (a) the *x*–axis ***(58.643)***, (b) the *y*–axis ***(117.286)***, and (c) the line *x* = 4. ***(33.510)***

7. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = , *y* = 0, and *x* = 4 about: (a) the *x*–axis ***(25.133)***, (b) the *y*–axis ***(80.425)***, (c) the line *x* = 4 ***(53.617)***, and (d) the line *x* = 6. ***(120.637)***

8. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = 2*x*2, *y* = 0, and *x* = 2 about: (a) the *y*–axis ***(50.265)*** and (b) the *x*–axis. ***(80.425)***

9. Find the volume of the solid of revolution generated by revolving the region bounded by *y* = 6 – 2*x* – *x*2 and *y* = *x* + 6 about: (a) the *x*–axis ***(152.681)*** and (b) the line *y* = 3. ***(67.858)***

10. The region bounded by the parabola *y* = 4*x* – *x*2 and the *x*–axis is revolved about the *x–*axis. Find the volume of the solid. ***(107.233)***

**Even More Practice! Disks and Washers**

***For problems 1 through 5, find the volume of the solid obtained by revolving about the x–axis the region with the given boundaries:***

1. *f*(*x*) = 2*x* + 1, *y* = 0, 1 < *x* < 4 ***(367.566)***

2. *f*(*x*) = sin *x*, *y* = 0, 1 < *x* < *π* ***(4.078)***

3. *f*(*x*) = (1/4)*x*2, *g*(*x*) = *x* ***(26.808)***

4. *f*(*x*) = sin *x*, *g*(*x*) = cos *x*, 0 < *x* < *π*/4 ***(1.571)***

***For problems 6 through 8, find the volume of the solid obtained by revolving about the y–axis the region with the given boundaries:***

6. *y* = *x*2, *y* = 0, 0 < *x* < 2 ***(25.133)***

7. *y* = *x*3, *x* = 2, *y* = 0 ***(40.212)***

8. Find the volume of the solid obtained by rotating the region bounded by the *x*–axis and the graph of

*y* = 1 – *x*2 about the line *y* = –3. ***(28.484)***

9. Find the volume of the solid obtained when the region bounded by the graphs of *y* = , *y* = 0, and

*x* = 9 is rotated about the line *y* = –2. ***(353.429)***