

**AP Calculus BC – Unit 5, Part 1 Extra Practice**

**5.1 – Extra Practice**

On #4b and #5b, sketch the region by hand (no calculator) and find the area enclosed by the curves (integrate by hand).

#4b.  $y = x^2$  and  $y = x^3$

On #4b and #5b, sketch the region by hand (no calculator) and find the area enclosed by the curves (integrate by hand).

#5b.  $x = -9 + y^2$  and  $x = y + 3$

On the rest of this assignment, sketch the curves and find the area enclosed (use your calculator for the sketch and the integral evaluation).

#6b.  $y = (x-1)^3$  and  $y = x-1$

#7b.  $y = -x^3 + 2$ ,  $y = x-3$ ,  $x = -1$ , and  $x = 1$

#8b.  $x = 2y - y^2$  and  $x = -y$

#9b.  $y = 2 \sin(x)$  and  $y = \tan(x)$   $-\frac{\pi}{3} \leq x \leq \frac{\pi}{3}$

## 5.2 – Extra Practice

Sketch and find the volume (use your calculator for the sketch and the integral evaluation).

#7b.  $y = -x^2 + 3x$ ,  $y = 0$  *about the x-axis*

#7c.  $y = \sin(x)$ ,  $x = \frac{\pi}{6}$ ,  $x = \frac{5\pi}{6}$ ,  $y = 0$  *about the x-axis*

#8b.  $y = 3x + 5$ ,  $y = 5$ ,  $y = 14$ ,  $x = 0$  *about the y-axis*

#9b.  $y = 2x^2$ ,  $y = 8$ ,  $x = 0$  *about the y-axis*

#10b.  $y = x^2$ ,  $y = \sqrt{x}$  *around  $y = 3$*

#11b.  $y = x^2 - 4x + 9$ ,  $y = 2x + 1$  around  $x = 1$

#12b.  $y = x^2 - 4x + 9$ ,  $y = 2x + 1$  around  $y = 9$

### 5.3 – Extra Practice

Sketch and find the volume using shell method (use your calculator for the sketch and the integral evaluation).

#7b.  $y = x^2 + 3x$ ,  $x = 0$ ,  $x = 3$ ,  $y = 0$  around the  $y$ -axis

#7c.  $y = \sin(x)$ ,  $x = 0$ ,  $x = \frac{5\pi}{6}$ ,  $y = 0$  around the  $y$ -axis

#8b.  $y = 3x$ ,  $y = 5$ ,  $x = 0$  around the  $x$ -axis



#9b.  $y = x^2$ ,  $y = \sqrt{x}$  around  $y = 3$

#10b.  $y = -2x + 8$ ,  $y = 0$ ,  $x = 0$  around  $x = 5$

#11b.  $y = x^3$ ,  $y = 0$ ,  $x = 2$  around  $x = 4$

a) using Disk method...

b) using Shell method...

#12b.  $y = x^2$ ,  $y = 0$ ,  $x = 1$ ,  $x = 2$  around the  $x$ -axis

a) using Disk method...

b) using Shell method...