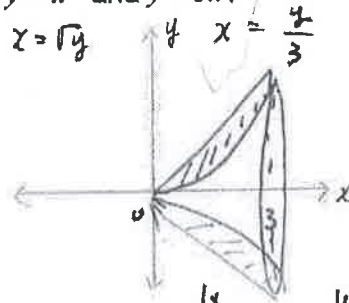


IB Calculus Exit Slip

Name: Key

The region M is enclosed by the function $y = x^2$ and $y = 3x$.

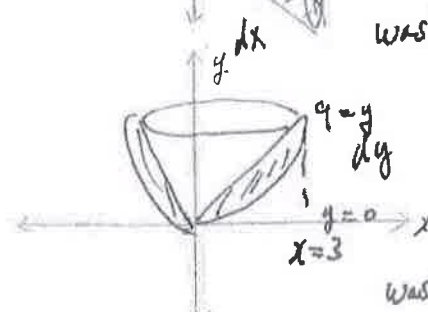
- a. Sketch the solid generated by revolving M about the x-axis and set up the integral of the volume.



Router = $3x$
 r inner = x^2

$$V = \pi \int_0^{4/3} ((3x)^2 - (x^2)^2) dx$$

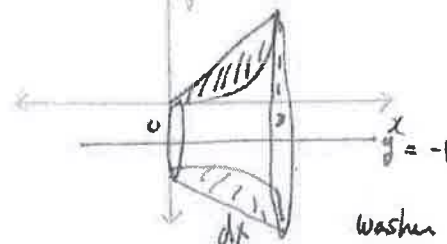
- b. Sketch the solid generated by revolving M about the y-axis and set up the integral of the volume.



washer Router = \sqrt{y}
 r inner = $\frac{y}{3}$

$$V = \pi \int_0^9 ((\sqrt{y})^2 - (\frac{y}{3})^2) dy$$

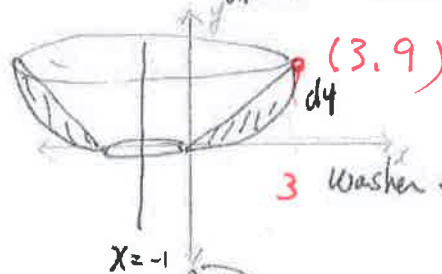
- c. Sketch the solid generated by revolving M about $y = -1$ and set up the integral of the volume.



washer Router = $3x + 1$
 r inner = $x^2 + 1$

$$V = \pi \int_0^3 ((3x+1)^2 - (x^2+1)^2) dx$$

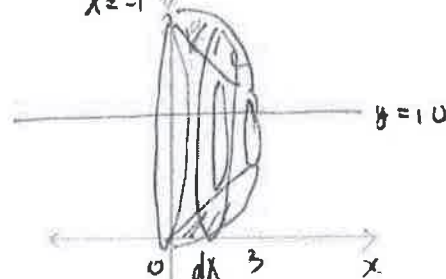
- d. Sketch the solid generated by revolving M about $x = -1$ and set up the integral of the volume.



washer Router = $\sqrt{y} + 1$
 r inner = $\frac{y}{3} + 1$

$$V = \pi \int_0^9 ((\sqrt{y}+1)^2 - (\frac{y}{3}+1)^2) dy$$

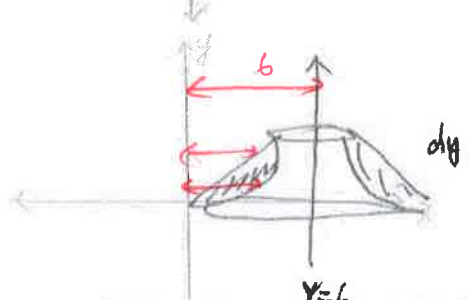
- e. Sketch the solid generated by revolving M about $y = 10$ and set up the integral of the volume.



washer Router = $10 - x^2$
 r inner = $10 - 3x$

$$V = \pi \int_0^3 ((10-x^2)^2 - (10-3x)^2) dx$$

- f. Sketch the solid generated by revolving M about $x = 6$ and set up the integral of the volume.



washer Router = $6 - \frac{y}{3}$
 r inner = $6 - \sqrt{y}$

$$V = \pi \int_0^9 ((6 - \frac{y}{3})^2 - (6 - \sqrt{y})^2) dy$$