March 21

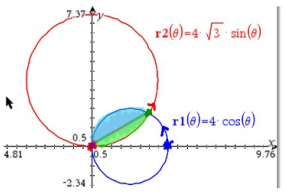
What topic do you feel most comfortable with in calculus? What topic are you least comfortable with?

March 20

Students will verbally explain how to find the area enclosed by polar curves

(using the words: radius, angle, arc...)

Set up, but do not solve, an integral expression for the area common to the interiors of $r = 4\cos\theta$ and $r = 4\sqrt{3}\sin\theta$



$4\sqrt{3}\sin\theta = 4\cos\theta$

$\sqrt{3}\sin\theta = \cos\theta$

$\sqrt{3} = \frac{\cos\theta}{\sin\theta} = \cot\theta \longrightarrow \tan\theta = \frac{1}{\sqrt{3}}$

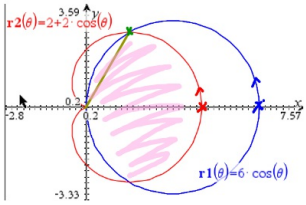
$\theta = \frac{\pi}{6}$

$0 = 4\cos\theta$

$\theta = \frac{\pi}{2}$

$$\frac{1}{2}\int_0^{\frac{\pi}{6}} (4\sqrt{3}\sin\theta)^2\,d\theta + \frac{1}{2}\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} (4\cos\theta)^2\,d\theta$$

Find the area shared by $r = 6\cos\theta$ and $r = 2 + 2\cos\theta$



$$\left(\frac{1}{2}\int_0^{\frac{\pi}{3}} (2+2\cos\theta)^2\,d\theta + \frac{1}{2}\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} (6\cos\theta)^2\,d\theta\right)2$$

$2 + 2\cos\theta = 6\cos\theta$

$2 = 4\cos\theta$

$\frac{1}{2} = \cos\theta$

$\theta = \frac{\pi}{3}$

$0 = 6\cos\theta$

$0 = \cos\theta$

$\theta = \frac{\pi}{2}$