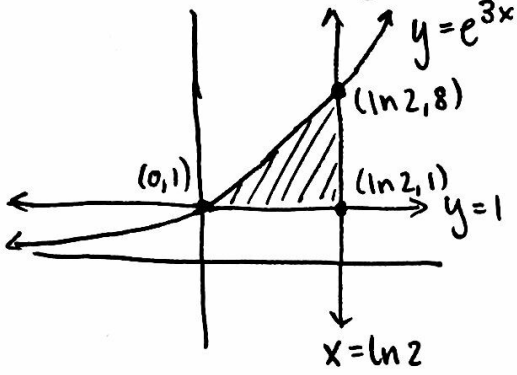
Quiz 9

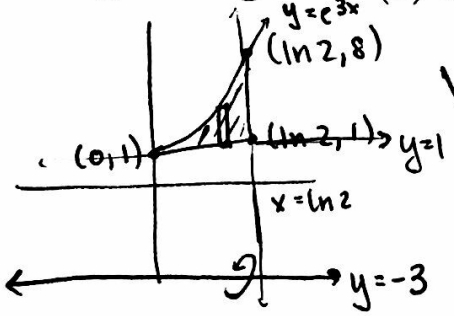
February 19, 2016

1. Sketch a graph of the region bounded by $y = e^{3x}$, $y = 1$, and $x = \ln 2$. Label all curves and points of intersection, and shade the region.



$\frac{1}{3}\ln y = \ln 2$
$\ln y = 3\ln 2$
$\ln y = \ln(2^3)$
$y = 8$
$(\ln 2, 8)$

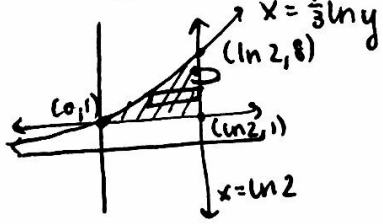
2. *Set up* the integral which gives the volume of the solid generated by revolving the region in (1) about the line $y = -3$.



$V = \pi \int_0^{\ln 2} (e^{3x} - (-3))^2 - (1 - (-3))^2 \, dx$

$R = e^{3x} - (-3)$
$r = 1 - (-3)$

3. *Set up* the integral which gives the volume of the solid generated by revolving the region in (1) about the line $x = \ln 2$.



$V = \pi \int_1^8 (\ln 2 - \frac{1}{3}\ln y)^2 \, dy$

$R = \ln 2 - \frac{1}{3}\ln y$
$r = \ln 2 - \ln 2^0 = 0$ (disk method)