

4.21  
3

$$y = \log_5(0.64^{2-\log_3 x} - 1.25^9 - (\log_3 x)^2)$$

$$0.64^{2-\log_3 x} - \left(\frac{5}{4}\right)^9 - (\log_3 x)^2 > 0 \quad \text{or } x > 0$$

$$\left[\left(\frac{4}{5}\right)^2\right]^{2-2\log_3 x} - \left(\frac{4}{5}\right)^{9-(\log_3 x)^2} > 0$$

$$\left(\frac{4}{5}\right)^{4-4t} > \left(\frac{4}{5}\right)^{t^2-9}$$

$$\log_3 x = t$$

$$4-4t < t^2-9$$

$$0 < t^2+4t-13$$

$$\frac{-4 \pm \sqrt{68}}{2} = -2 \pm \sqrt{17}$$

$$\left. \begin{array}{l} \log_3 x < -2-\sqrt{17} \\ 0 < x < 3^{-2-\sqrt{17}} \end{array} \right\} \left. \begin{array}{l} \log_3 x > -2+\sqrt{17} \\ x > 3^{-2+\sqrt{17}} \end{array} \right\}$$