

EVALUATE THE FUNCTIONS

$$y = \log_3(x^2 + 5) \text{ for } x=2$$

$$y(2) = \log_3(4+5) = \log_3 9 = 2 \quad 3^2 = 9$$

$$y = \log_{\frac{1}{2}}(x+6) \text{ for } x=3$$

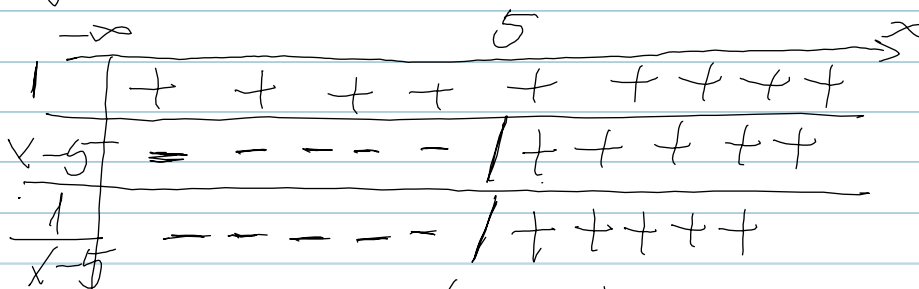
$$y(3) = \log_{\frac{1}{2}}(3+6) = \log_{\frac{1}{2}}(9) = -2$$

FIND THE DOMAIN OF THE FUNCTIONS

$$g(x) = \ln\left(\frac{1}{x-5}\right)$$

$$\frac{1}{x-5} > 0$$

$$\begin{aligned} 1 &> 0 \\ x-5 &> 0 \\ x &> 5 \end{aligned}$$



Domain $(5, \infty)$

$$h(x) = 3 + \ln(2x+1)$$

$$2x+1 > 0$$

$$2x > -1$$

$$x > -\frac{1}{2}$$

Domain $(-\frac{1}{2}, \infty)$

SOLVE THE EQUATIONS

$$\log_5 x = 3 \Rightarrow 5^3 = x$$
$$x > 0$$
$$(0, \infty)$$
$$x = 125 \in (0, \infty) \checkmark$$

$$\log_3 (3x-2) = 2 \Rightarrow 3^2 = 3x-2$$
$$3x-2 > 0$$
$$x > \frac{2}{3}$$
$$\left(\frac{2}{3}, \infty\right)$$
$$3x-2=9$$
$$3x=11$$
$$x = \frac{11}{3} \in \left(\frac{2}{3}, \infty\right) \checkmark$$

$$e^{-2x} = \frac{1}{3}$$
$$\ln e^{-2x} = \ln \frac{1}{3}$$
$$-2x = \ln \frac{1}{3}$$
$$x = -\frac{\ln \frac{1}{3}}{2}$$

$$\frac{2 \cdot 10^{2-x}}{2} = \frac{5}{2}$$
$$10^{2-x} = \frac{5}{2}$$
$$\log_{10} 10^{2-x} = \log \frac{5}{2}$$
$$2-x = \log \frac{5}{2}$$
$$-x = \log \frac{5}{2} - 2$$
$$x = 2 - \log \frac{5}{2}$$