

Today's Plan:

Learning Target (standard): I will solve logarithmic equations & review properties of functions.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and review assignment in preparation for a test

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Worksheet p.561 #36-62 even

$$36)x = \frac{2}{5}$$

$$38)x = 6$$

$$40)x = 5$$

$$42)x = -9, 3$$

$$44)x = -2$$

$$46)x = 10,000$$

$$48)x = -\frac{2}{999} \text{ no solution}$$

$$50)x = \frac{400}{99}$$

$$52)x = -3, 5$$

$$54)x = -\frac{1}{2}, 2$$

$$56)x = -\frac{1}{3}, 2$$

$$58)x = -2 \text{ no solution}$$

$$60)x = -\frac{3}{2}, 2$$

$$62)x = \frac{-1 - \sqrt{31}}{2}, \frac{-1 + \sqrt{31}}{2}$$

Solve.

$$\log_8 (3x^2 + 6) + \log_8 9 = \log_8 66$$

$$\log_8 9(3x^2 + 6) = \log_8 66$$

$$27x^2 + 54 = 66$$

$$27x^2 = 12$$

$$\sqrt{x^2} = \pm \sqrt{\frac{4}{9}}$$

$$x = \frac{2}{3}, -\frac{2}{3}$$

Solve.

$$9 \cdot 5^{n+2} = 43$$

$$5^{n+2} = \frac{43}{9}$$

$$\ln 5^{n+2} = \ln\left(\frac{43}{9}\right)$$

$$(n+2)\ln 5 = \ln\left(\frac{43}{9}\right)$$

$$(n+2)\ln 5 = \ln 43 - \ln 9$$

$$n+2 = \frac{\ln 43 - \ln 9}{\ln 5}$$

$$n = \frac{\ln 43 - \ln 9}{\ln 5} - 2$$

Solve.

$$5 \cdot 8^{x-3} = 100$$

$$8^{x-3} = 20$$

$$\ln 8^{x-3} = \ln 20$$

$$(x-3)\ln 8 = \ln 20$$

$$x-3 = \frac{\ln 20}{\ln 8}$$

$$x = \frac{\ln 20}{\ln 8} + 3$$

$$\frac{\ln 8}{\ln 2} = \frac{\ln 2^3}{\ln 2}$$

$$= \frac{3 \ln 2}{\ln 2}$$

Solve.

$$\log_5 \left(\frac{2x}{x-1} \right) = 1$$

$$5^1 = \frac{2x}{x-1}$$

$$5x - 5 = 2x$$

$$3x = 5$$

$$x = \frac{5}{3}$$

Solve.

$$\log_2(x-3) + \log_2(x+4) = 3$$

$$\log_2(x-3)(x+4) = 3$$

$$\log_2(x^2+x-12) = 3$$

$$x^2+x-12 = 2^3$$

$$x^2+x-12 = 8$$

$$x^2+x-20 = 0$$

$$(x+5)(x-4) = 0$$

$$x = -5, 4$$

$$x = 4$$

Solve.

$$\log_8 6x = \log_8 2 + \log_8(x-4)$$

$$\log_8 6x = \log_8 2(x-4)$$

$$6x = 2x - 8$$

$$4x = -8$$

$$x = -2$$

no solution

Solve.

$$\log_{16} x + \log_4 x + \log_2 x = 7$$

$$\frac{\log_2 x}{\log_2 16} + \frac{\log_2 x}{\log_2 4} + \log_2 x = 7$$

$$\frac{\log_2 x}{4} + \frac{\log_2 x}{2} + \log_2 x = 7$$

$$\frac{1}{4} \log_2 x + \frac{1}{2} \log_2 x + \log_2 x = 7$$

$$\frac{7}{4} \log_2 x = 7$$

$$\log_2 x = 4$$

$$x = 2^4$$

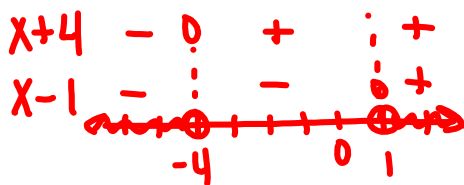
$$x = 16$$

Find the domain and intercepts.

$$y = 3 - 2 \ln(x^2 + 3x - 4) \quad x^2 + 3x - 4 > 0$$

$$D: \{x \mid x < -4, x > 1\} \quad (x+4)(x-1) > 0$$

$$R: \mathbb{R}$$



$$I_x: (\quad , 0)$$

$$I_y: (0, -)$$

$$0 = 3 - 2 \ln(x^2 + 3x - 4)$$

$$-3 = -2 \ln(x^2 + 3x - 4)$$

$$\frac{3}{2} = \ln(x^2 + 3x - 4)$$

$$e^{\frac{3}{2}} = x^2 + 3x - 4$$

$x=0$ is not in D

Find the domain:

$$y = \sqrt{5 - 2x^2}$$

$$5 - 2x^2 \geq 0$$

$$\sqrt{5} + \sqrt{2}x = 0$$

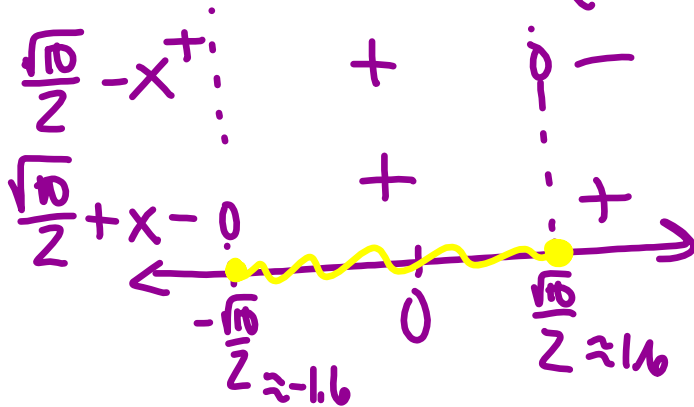
$$\sqrt{2}x = -\sqrt{5}$$

$$x = -\frac{\sqrt{5}}{\sqrt{2}}$$

$$(\sqrt{5} - \sqrt{2}x)(\sqrt{5} + \sqrt{2}x) \geq 0$$

$$x = -\frac{\sqrt{5}}{\sqrt{2}}$$

$$\left(\frac{\sqrt{5}}{2} - x\right)\left(\frac{\sqrt{5}}{2} + x\right) \geq 0$$



$$D: \left\{ x \mid -\frac{\sqrt{5}}{2} \leq x \leq \frac{\sqrt{5}}{2} \right\}$$

Assignment:

"TEST" on functions