

Today's Plan:

Learning Target (standard): I will review 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 and complete practice problems on functions.

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

Assessment: Board work, homework check and homework assignment

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

Find the exclusions from the domain. Use those to find the domain of the function.

$$f(x) = \sqrt{4x+12} \quad (-)$$

$$4x+12 < 0$$

$$4x < -12$$

$$x < -3$$

exclusions: $\{x \mid x < -3\}$

\mathcal{D} : $\{x \mid x \geq -3\}$

A given number is in the range of the function. Find a corresponding element in the domain and write the ordered pair.

$$f(x) = x^2 + 4 \quad 8 = y$$

$$8 = x^2 + 4$$

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

$$x = 2, -2$$

$$(2, 8) \text{ \& } (-2, 8)$$

Evaluate.

$$f(x) = 3x^2 - 4 \quad g(x) = 2x + 1$$

$$f(g(x)) = f(2x+1)$$

$$= 3(2x+1)^2 - 4$$

$$= 3(2x+1)(2x+1) - 4$$

$$= 3(4x^2 + 2x + 2x + 1) - 4$$

$$= 12x^2 + \underline{6x} + \underline{6x} + \underline{3} - \underline{4}$$

$$f(g(x)) = 12x^2 + 12x - 1$$

Evaluate.

$$f(x) = 6x + 8 \quad g(x) = 4x + 2$$

$$g(\underline{f(-1)}) =$$

$$g(2) = 4(2) + 2 \\ = 8 + 2$$

$$g(2) = 10$$

$$f(-1) = 6(-1) + 8 \\ = -6 + 8$$

$$f(-1) = 2$$

$$g(f(-1)) = 10$$

Find the inverse, if it exists. **Verify that the two are inverses.**

$$f(x) = \frac{1}{2}x + 8 \quad | -1 \checkmark$$

$$y = \frac{1}{2}x + 8$$

$$x = \frac{1}{2}y + 8$$

$$2 \left[x - 8 = \frac{1}{2}y \right]$$

$$2x - 16 = y$$

$$f^{-1}(x) = 2x - 16$$

Graph. State the domain and range.

$$f(x) = -2|x-3| + 4$$

vertex: (3,4)

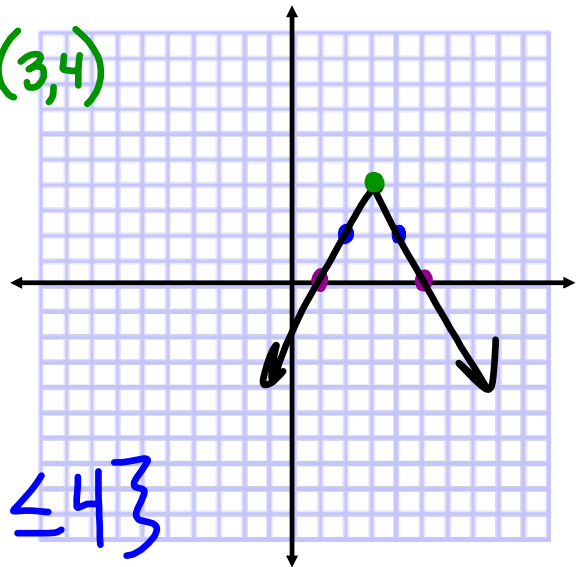
$$x-3=0$$

$$x=3$$

| x | y |
|---|---|
| 1 | 0 |
| 2 | 2 |
| 3 | 4 |
| 4 | 2 |
| 5 | 0 |

$$D: \mathbb{R}$$

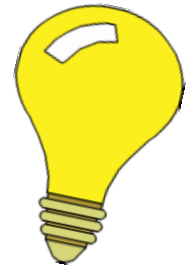
$$R: \{y \mid y \leq 4\}$$



The illumination (I) produced by a light varies inversely as the square of the distance (d) from the light. If the illumination produced from 10 feet from a light is 12 lumens, find the illumination 2 feet from the light.

$$\textcircled{1} I = \frac{k}{d^2}$$

$$\textcircled{3} I = \frac{1200}{d^2}$$



$$\textcircled{2} 12 = \frac{k}{10^2}$$

$$\textcircled{4} I = \frac{1200}{2^2}$$

$$12 = \frac{k}{100}$$

$$k = 1200$$

$$I = \frac{1200}{4}$$

$$I = 300 \text{ lumens}$$