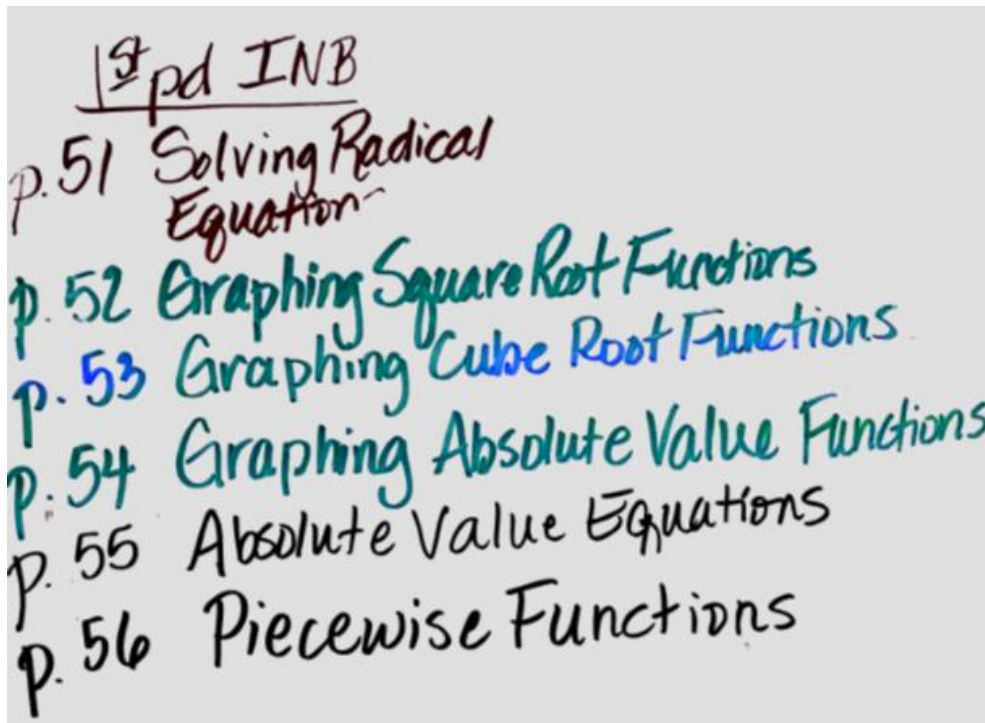


Please be sure to update your notebooks with the following.



A piecewise function is a function defined by two or more equations over a specified domain.

Given,  $f(x) = \begin{cases} 3x - 4, & x < 0 \\ 3x + 1, & x \geq 0 \end{cases}$  If evaluating an  $x$  value less than 0, plug it into  $3x - 4$ , if evaluating an  $x$  value greater than or equal to zero, plug it into  $3x + 1$ .

**Examples:** Use the given functions to find the requested values.

Given:  $f(x) = \begin{cases} 3x - 4, & x < 0 \\ 3x + 1, & x \geq 0 \end{cases}$  and  $g(x) = \begin{cases} x^2 + 1, & x < 2 \\ x - 1, & x \geq 2 \end{cases}$

1. a.  $f(2)$

$$\begin{aligned} f(2) &= 3(2) + 1 \\ &= 7 \end{aligned}$$

b.  $f(0)$

$$\begin{aligned} f(0) &= 3(0) + 1 \\ &= 1 \end{aligned}$$

c.  $f(-6)$

$$\begin{aligned} f(-6) &= 3(-6) - 4 \\ &= -22 \end{aligned}$$

2. a.  $g(-1)$

$$\begin{aligned} g(-1) &= (-1)^2 + 1 \\ &= 2 \end{aligned}$$

b.  $g(0)$

$$\begin{aligned} g(0) &= (0)^2 + 1 \\ &= 1 \end{aligned}$$

c.  $g(4)$

$$\begin{aligned} g(4) &= (4) - 1 \\ &= 3 \end{aligned}$$

CR Algebra 2  
Evaluating Piecewise Functions

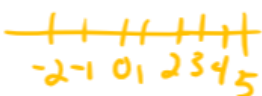
Name \_\_\_\_\_

Given the following piecewise functions, evaluate for the given value of x:

$$f(x) = \begin{cases} -x + 4, & x < -5 \\ x^2, & x \geq -5 \end{cases}$$

$$g(x) = \begin{cases} 2x - 5, & x \leq 3 \\ x - 7, & x > 3 \end{cases}$$

$$h(x) = \begin{cases} |x + 3|, & x \leq -4 \\ \frac{1}{2}x, & x > -4 \end{cases}$$

$$j(x) = \begin{cases} x + 1, & x < -2 \\ 3x, & -2 \leq x \leq 5 \\ x - 5, & x > 5 \end{cases}$$


1.  $f(-2)$

$$(-2)^2 = 4$$

2.  $j(4)$

$$3(4) = 12$$

3.  $g(3)$

$$2(3) - 5 = 1$$

4.  $h(2)$

$$\frac{1}{2}(2) = 1$$

5.  $g(0)$

$$2(0) - 5 = -5$$

6.  $j(-2)$

$$3(-2) = -6$$

7.  $f(5)$

$$(5)^2 = 25$$

8.  $h(-6)$

$$|-6 + 3| = 3$$

9.  $h(10)$

$$\frac{1}{2}(10) = 5$$

10.  $f(0)$

$$0^2 = 0$$

11.  $g(15.5)$

$$(15.5) - 7 = 8.5$$

12.  $j(9)$

$$9 - 5 = 4$$

13.  $j(5)$

$$3(5) = 15$$

14.  $h(-4)$

$$|-4 + 3| = 1$$

15.  $g\left(\frac{1}{2}\right)$

$$2\left(\frac{1}{2}\right) - 5 = -4$$

16.  $f(-8)$

$$-(-8) + 4 = 12$$

17.  $h(7)$

$$\frac{1}{2}(7) = 3.5$$

18.  $f(10)$

$$(10)^2 = 100$$