Name: _____ Per: _____ Date: _____
Serafino • Algebra 2E

2-RE 4 Unit 2 – Recap & Exploration

Part 4: Analyzing Functions & Solving Equations

Part 4: Analyzing Functions

- ☐ Evaluating and Solving linear Equations
  - ☐ Find x, given y ☐ Find y, given x
- ☐ Solving Equations & Inequalities Equations when....
  - ☐ setting equal to a constant (number) ☐ when setting equal to a function (linear or absolute value)
- ☐ Solving Systems by Graphing...
  - ☐ setting equal to a constant (number) ☐ when setting equal to a function (linear or absolute value)
- ☐ Identifying Key Info from an Equation or Graph
  - ☐ Domain / Range ☐ Vertex, Max/Min ☐ Axis of Symmetry ☐ y–intercept ☐ x–intercept(s)

Do all work on separate paper – there is not enough room and it's not worth getting frustrated.

I. LINEAR FUNCTIONS

1. $f(x) = 3x + 6$

Critical Information:

a. Domain? b. Range? c. x–intercept? d. y–intercept?

Evaluating:

e. f(7) = f. f(5/6) = g. f(–40) = h. f(–1/9) =

Solving Equations / Inequalities & Graphing:
Finding where a function equals/is less than/greater than a constant:

i. f(x) = 10 j. f(x) = –180 k. f(x) = 7/2 l. f(x) = –1/4

m. f(x) ≤ 8 n. f(x) > 5/2 o. f(x) < –9/2 p. f(x) > 100

Finding where a function equals/is less than/greater than another function:

q. f(x) = –2x + 6 r. f(x) = ½ x – 4 s. f(x) = 3x – 11

t. f(x) ≤ 3x + 10 u. f(x) > 10x + 4 v. f(x) < 3x

2. $f(x) = -\frac{3}{2}(x-1)+5$

Critical Information:

a. Domain? b. Range? c. x–intercept? d. y–intercept?

Evaluating:

e. f(7) = f. f(5/6) = g. f(–40) = h. f(–1/9) =

Solving Equations / Inequalities & Graphing:
Finding where a function equals/is less than/greater than a constant:

i. f(x) = 10 j. f(x) = –180 k. f(x) = 7/2 l. f(x) = –1/4

m. f(x) ≤ 8 n. f(x) > 5/2 o. f(x) < –9/2 p. f(x) > 100

Finding where a function equals/is less than/greater than another function:

q. f(x) = –2x + 6 r. f(x) = –3/2x + 6.5 s. f(x) > –3/2x

3. $2x - 5y = 15$

Critical Information:

a. Domain? b. Range? c. x–intercept? d. y–intercept?

Evaluating:

e. f(7) = f. f(5/6) = g. f(–40) = h. f(–1/9) =

Solving Equations / Inequalities & Graphing:
Finding where a function equals/is less than/greater than a constant:

i. f(x) = 10 j. f(x) = –180 k. f(x) = 7/2 l. f(x) = –1/4

m. f(x) ≤ 8 n. f(x) > 5/2 o. f(x) < –9/2 p. f(x) > 100

II. ABSOLUTE VALUE FUNCTION

1. $f(x) = 2|x - 1| - 6$

Critical Information:

a. Domain? b. Range? c. AOS? d. Vertex?

e. y–intercept? f x–intercept(s)?

Evaluating:

g. f(–40) = h. f(5/2) = i. f(6) =

Solving Equations / Inequalities & Graphing:
Finding where a function equals/is less than/greater than a constant:

i. f(x) = 10 j. f(x) = –180 k. f(x) = 7/2 l. f(x) = –1/4

m. f(x) ≤ 8 n. f(x) > 5/2 o. f(x) < –9/2 p. f(x) > 100

Finding where a function equals another function:

q. f(x) = x r. f(x) = 6x s. f(x) = –6x

t. f(x) = x – 1 u. f(x) = 2/3x – 2 v. f(x) = 1/2x – 10

2. $f(x) = -3|x| - 2$

Critical Information:

a. Domain? b. Range? c. AOS? d. Vertex?

e. y–intercept? f x–intercept(s)?

Evaluating:

g. f(–4) = h. f(5/2) = i. f(6) =

Solving Equations / Inequalities & Graphing:
Finding where a function equals/is less than/greater than a constant:

i. f(x) = –11 j. f(x) = –7/2 k. f(x) > –20 l. f(x) ≤ –1

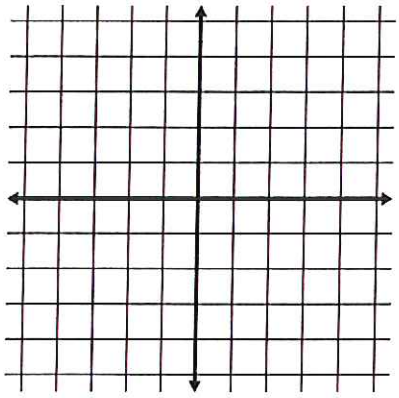
3. $f(x) = 3|5x - 7| - 2$

a. Domain? b. Range? c. AOS? d. Vertex?

e. y–intercept? f. x–intercept(s)?

III. PIECEWISE FUNCTIONS

1. $$f(x) = \begin{cases} -x - 3 & \text{if } x \le -3 \\ x + 3 & \text{if } -3 < x < 0 \\ -2x + 3 & \text{if } 0 \le x < 3 \\ x - 6 & \text{if } x \ge 3 \end{cases}$$



a. Domain

b. Range?

c. y–intercept?

d. x–intercept(s)?

e. Where is f(x) increasing?

f. Where is f(x) decreasing?

g. f(–1) =

h. $f\left(\frac{1}{2}\right)$ =

i. f(–200) =

j. f(200) =

k. f(x) = 1

l. f(x) = –1?

m. f(x) = –3

n. f(x) = 27

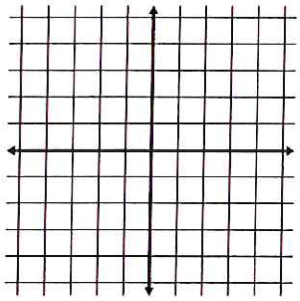
o. f(x) < 2

p. f (x) ≥ –5

q. f(x) ≤ 3

r. f(x) > –5

2. $$f(x) = \begin{cases} 2x + 3, & -3 \le x < -1 \\ 2|x - 2| - 2, & -1 \le x < 3 \\ 4, & x > 4 \end{cases}$$



k. Domain

b. Range?

c. y–intercept?

d. x–intercept(s)?

e. f(–1) =

f. f (100) =

g. f(3/8) =

h. f(7/2) =

i. f(x) = –3

i. f(x) = –2?

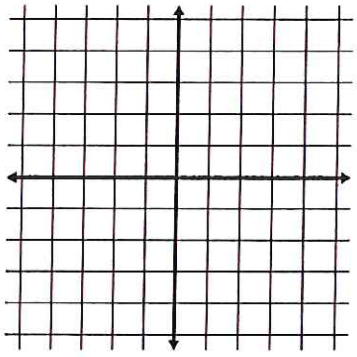
j. f(x) = 4

k. f(x) = 1

l. f(x) < 2

m. f (x) ≥ –5

o. f(x) < 3



p. he piecewise function is being transformed to g(x) = f(x + 3) – 2. Describe the transformations, write the function of g(x) and graph g(x).

g(x) =