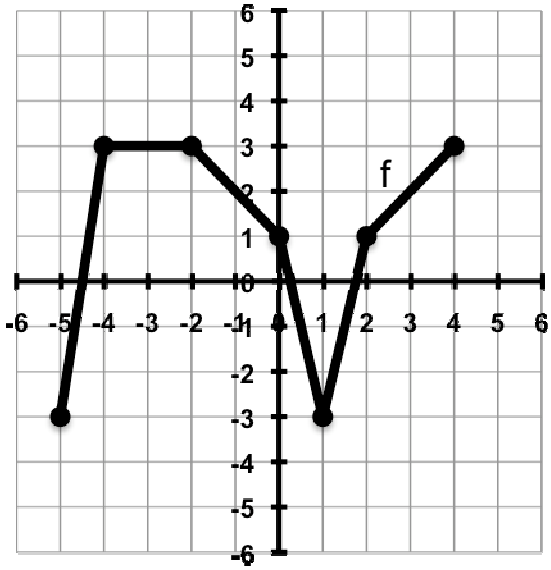
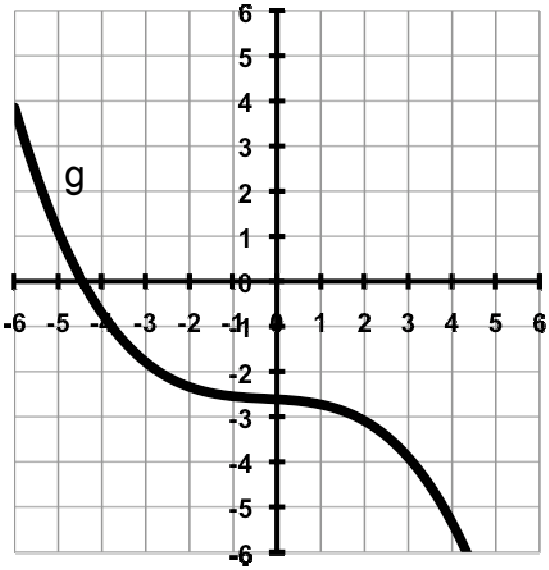
Sections 8.1 – 8.3 Unit Test – Relations and Functions

Name_____Section_____

Be sure to show all your work and circle your answer.

Use the graphs below to answer the following:





1a) Find f(– 1), f(0), and f(3).

1b) Find all values of x such that f(x) = – 3.

1c) Write the domain of f.

1d) Write the range of f.

2a) Find g(– 4), g(0), and g(3)

2b) Find all the values of x such that g(x) = 0.

2c) Is the relation g a function?

3a) State the intervals where f is increasing.

3b) State the intervals where f is decreasing.

3c) State the intervals where f is constant.

4a) Find f(– 3)•g(2)

4b) Find g(– 5) + f(– 5).

4c) Find $\frac{f(-3)}{g(-3)}$.

Given f(x) = 4x – 5 and g(x) = $2x^2$ – 3, find:

5a) f(2) – g(2)

5b) f(1) • g(1)

Given f(x) = $\sqrt{x-2}$ and g(x) = 3x + 2, find:

6a) f(11) + g(11)

6b) $\frac{f(6)}{g(6)}$

Classify each function as constant, linear, quadratic, or none of these:

7a) h(x) = $3x^2$ – 6x + 4

7b) r(x) = 9

8a) g(x) = 4x – 5.7

8b) p(x) = $\sqrt{x-4}$

Find the domain of the following. Write your answer in interval notation:

9) h(x) = $\sqrt{7-5x}$

10) f(x) = $\frac{x-5}{x^2-16}$

Find the x- and y-intercepts of the following:

11) g(x) = – $\frac{2}{3}$x + 18

Graph each function:

12) f(x) = $\frac{2}{3}$x – 4

13) g(x) = | x + 4 |

14) h(x) = x^2 – 2

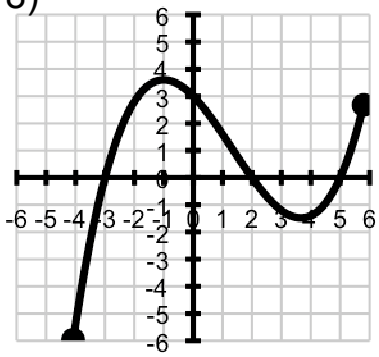
15) h(x) = $\sqrt{x}$

16) f(x) = – 2x + 3

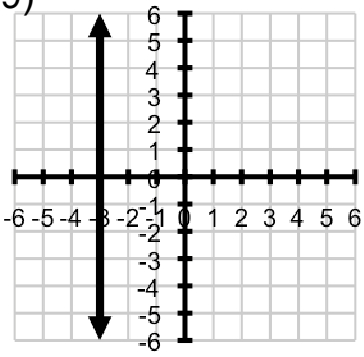
17) g(x) = 4

a) Is the following relation a function? Why or why not?
b) Find the domain. c) Find the range

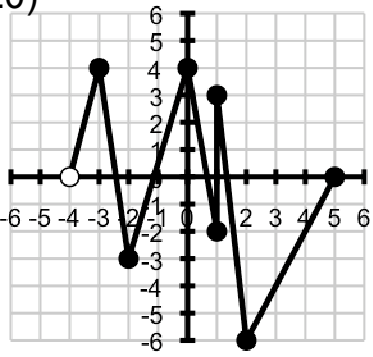
18)



19)



20)



Answers:

1a) f(– 1) = 2, f(0) = 1, f(3) = 2 1b) {– 5, 1} 1c) [– 5, 4]

1d) [– 3, 3] 2a) g(– 4) = – 1, g(0) = – 2.5, g(3) = – 4 2b) {– 4.5}

2c) Yes, because it passes the vertical line test.

3a) (– 5, – 4) U (1, 4) 3b) (– 2, 1) 3c) (– 4, – 2)

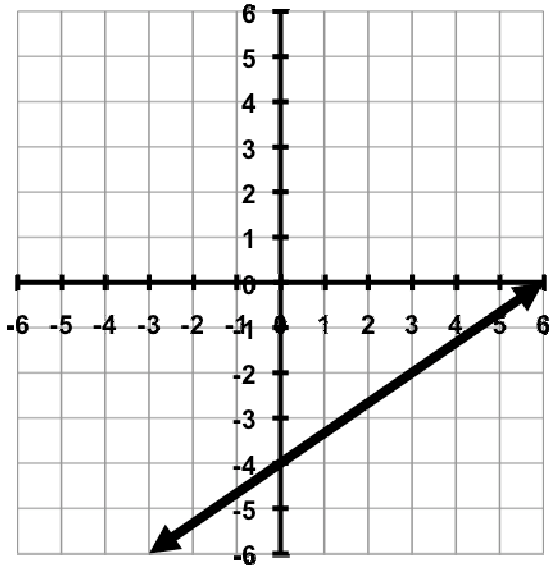
4a) – 9 4b) – 2 4c) – 1.5 5a) – 2 5b) 1

6a) 38 6b) $\frac{1}{10}$ 7a) quadratic 7b) constant 8a) linear

8b) none of these 9) $(-\infty, 1.4]$ 10) $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

11) x-int: (27, 0) y-int: (0, 18)

12)



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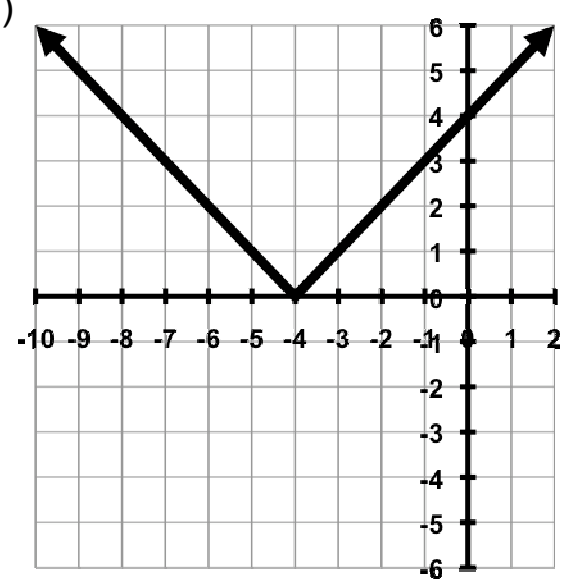

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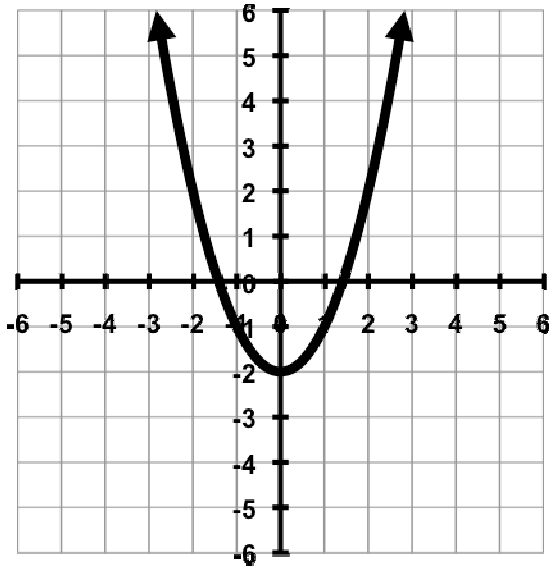

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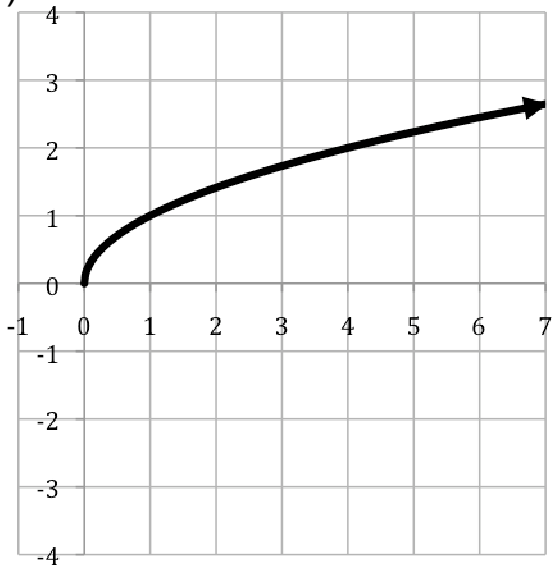

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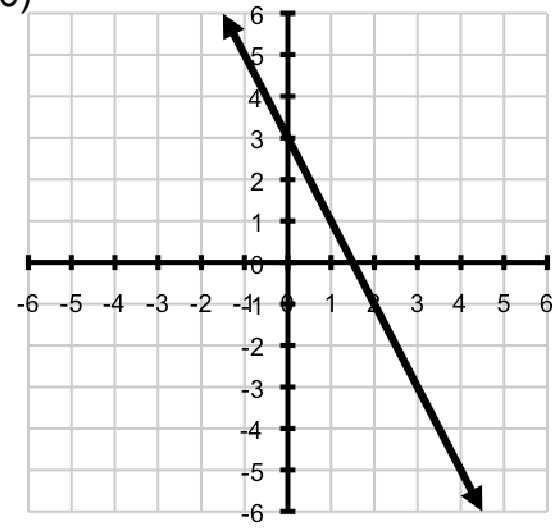

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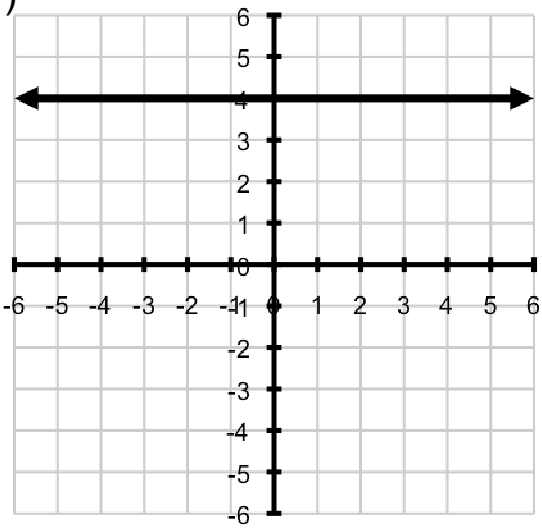

18a) Yes, because each vertical line passes through at most one point.

18b) Domain: [– 4, 6] 18c) Range: [– 6, 3.5]

19a) No, because the vertical line x = – 3 passes through more than one point. 19b) Domain: {– 3} 19c) Range: $(-\infty, \infty)$

20a) No, because the vertical line x = 1 passes through more than one point. 20b) Domain: (– 4, 5] 20c) Range: [– 6, 4]