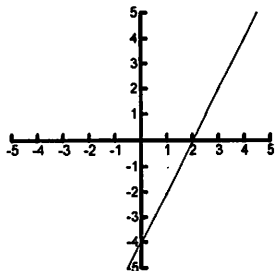


Review Worksheet for the Unit 2C Test

Name _____ Date _____

For each of the functions find the following characteristics.

1.



Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

x-intercept(s): $x = 2$ or $(2, 0)$

y-intercept(s): $y = -4$ or $(0, -4)$

Interval of Increase: $(-\infty, \infty)$

Interval of Decrease: *None*

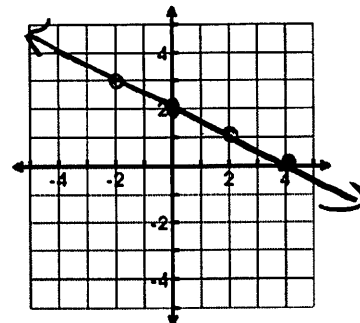
Slope: $m = 2$

Equation: $y = 2x - 4$

End Behavior: As $x \rightarrow \infty, y \rightarrow \infty$

As $x \rightarrow -\infty, y \rightarrow -\infty$

2. Graph: $y = -\frac{1}{2}x + 2$



Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

x-intercept(s): $x = 4$ or $(4, 0)$

y-intercept(s): $y = 2$ or $(0, 2)$

Interval of Increase: *None*

Interval of Decrease: $(-\infty, \infty)$

Slope: $m = -\frac{1}{2}$

End Behavior: As $x \rightarrow \infty, y \rightarrow -\infty$

As $x \rightarrow -\infty, y \rightarrow \infty$

Function Notation. Find the following using the three given functions.

$$f(x) = 2x - 4$$

$$g(x) = x^3 - 8$$

$$h(x) = x^2 - 3x$$

3. $g(6)$

$$\begin{aligned} g(6) &= (6)^3 - 8 \\ &= 216 - 8 \end{aligned}$$

$$g(6) = 208$$

4. $h(-2)$

$$\begin{aligned} h(-2) &= (-2)^2 - 3(-2) \\ &= 4 + 6 \end{aligned}$$

$$h(-2) = 10$$

5. $f(5x+6)$

$$\begin{aligned} f(5x+6) &= 2(5x+6) - 4 \\ &= 10x + 12 - 4 \end{aligned}$$

$$f(5x+6) = 10x + 8$$

$$f(x) = 2x - 4$$

$$g(x) = x^3 - 8$$

$$h(x) = x^2 - 3x$$

$$6. 3g(x) = 3(x^3 - 8)$$

$$= 3x^3 - 24$$

$$7. 2h(x) + 4g(x)$$

$$2(x^2 - 3x) + 4(x^3 - 8)$$

$$= 2x^2 - 6x + 4x^3 - 32$$

$$= 4x^3 + 2x^2 - 6x - 32$$

$$8. f(x) - h(x)$$

$$2x - 4 - (x^2 - 3x)$$

$$2x - 4 - x^2 + 3x$$

$$= -x^2 + 5x - 4$$

Use the graph to answer the following.

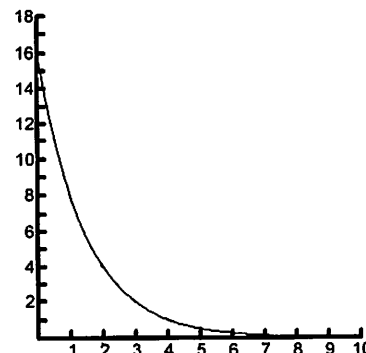
$$9. f(2) = \underline{4}$$

$$10. f(4) = \underline{1}$$

$$11. f(\underline{1}) = 8$$

12. Is this a function?

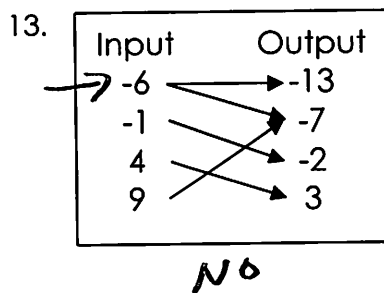
yes



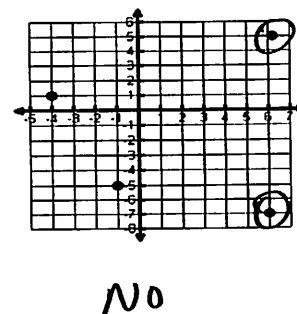
Determine whether the relation is a function. If it is a function, state the domain and range.

$$12. \{(-3,0), (4,1), (-3,2)\}$$

NO



14.



NO

Find the rate of change.

15. $(6, -3), (8, -2)$

$$\frac{-2 - (-3)}{8 - 6} = \boxed{\frac{1}{2}}$$

16. $f(x) = -2x + 4, -3 \leq x \leq 2.$

$$f(2) = -2(2) + 4 = 0$$

$$f(-3) = -2(-3) + 4 = 10$$

$(-3, 10)(2, 0)$

$$\frac{0 - 10}{2 - (-3)} = \frac{-10}{5} = -2$$

$$\boxed{ROC = -2}$$

17. From 2 years to 4 years.

t (Years)	1	2	3	4
f(t)	4	8	10	16

$(2, 8) (4, 16)$

$$\frac{16 - 8}{4 - 2} = \frac{8}{2} = \boxed{4}$$

18. $g(x) = 3x - 2$ when $x_1 = 0$ and $x_2 = 4.$

$$g(0) = 3(0) - 2 = -2$$

$$g(4) = 3(4) - 2 = 10$$

$(0, -2)(4, 10)$

$$\frac{10 - (-2)}{4 - 0} = \frac{12}{4} = 3$$

$$\boxed{ROC = 3}$$

Sequences

19. Use the sequence to answer the following questions: 4.5, 3.3, 2.1, ...

A. $a_6 = -1.5$

B. Recursive form:

$$a_1 = 4.5$$

$$a_n = a_{n-1} - 1.2$$

C. Explicit/Closed Formula:

$$a_n = 5.7 - 1.2n$$

D. $a_{40} =$

$$a_{40} = 5.7 - 1.2(40)$$

$$= 5.7 - 48$$

$$\boxed{a_{40} = -42.3}$$

20. Use the sequence to answer the following questions: 8, 12, 16, ...

A. $a_7 = 32$

B. Recursive Form:

$$a_1 = 8$$

$$a_n = a_{n-1} + 4$$

C. Explicit/Closed Form:

$$a_n = 4 + 4n$$

D. $a_{72} =$

$$a_{72} = 4 + 4(72)$$

$$4 + 288$$

$$\boxed{a_{72} = 292}$$