AGS2
AGS1 Review #1

Name: Key
Period: ______ Date: ______

Module 1

{1} Consider the following sequence:

n	1	2	3	4
$f(n)$	2	10	50	250

×5 ×5 ×5

{a} Is the sequence above arithmetic or geometric? How do you know?

geometric because each output is multiplied by a constant (5) to get the next output.

{b} Create a recursive formula for the sequence.

$f(n) = f(n-1) \cdot 5, \quad f(1) = 2$

{c} Create an explicit formula for the sequence.

$f(n) = \left(\frac{2}{5}\right) \cdot 5^n$

or $f(n) = (0.4) \cdot 5^n$

or $f(n) = 2 \cdot 5^{n-1}$

{2} Consider the following sequence:

n	0	1	2	3
$f(n)$	24	16	8	0

−8 −8 −8

{a} Is the sequence above arithmetic or geometric? How do you know?

arithmetic because each output has a constant (−8) value being added to it.
or subtracted from

{b} Create a recursive formula for the sequence.

$f(n) = f(n-1) - 8, \quad f(0) = 24$

{c} Create an explicit formula for the sequence.

$f(n) = -8$

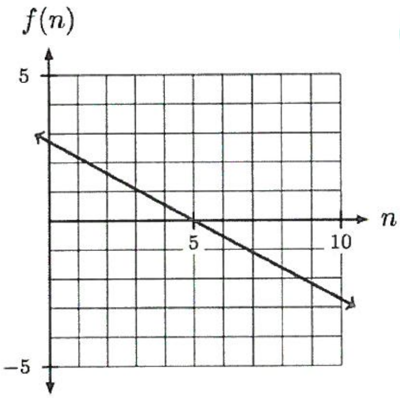
Module 2

For exercises 3-6, decide whether the given function is discrete or continuous, explain your choice. Additionally, decide if the function is linear/arithmetic or exponential/geometric, explain your choice.

{3} $y = 2x + 5$ continuous, linear (no exponents)

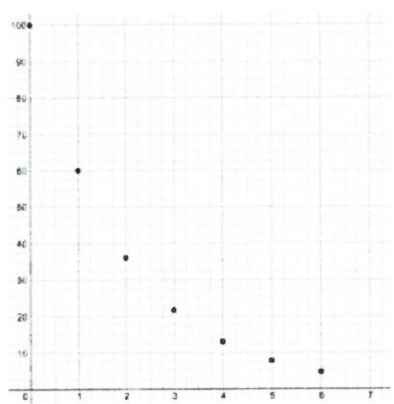
{4} $y = 2\left(\frac{1}{2}\right)^x$ continuous, exponential

{5}



continuous, linear

{6}



discrete, exponential

{7} Fill in the table for a linear relation. Then, write an equation for the relation.

x	0	1	2	3	4	5
y	−4	3	10	17	24	31

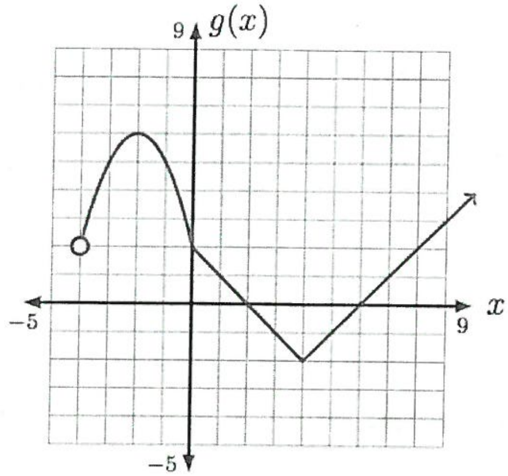
+7 +7 +7 +7 +7

(5, 31)
(1, 3)

$\frac{31-3}{5-1} = \frac{28}{4} = 7$

Module 3

{8} Use the graph below to determine each of the following. Write a-e in interval notation, and f-i in coordinate notation.



{a} Domain: $(-4, \infty)$

{b} Range: $[-2, \infty)$

{c} Intervals of increase: $(-4,-2) \cup (4,+\infty)$

{d} Intervals of decrease: $(-2,4)$

{e} Intervals of constant: none

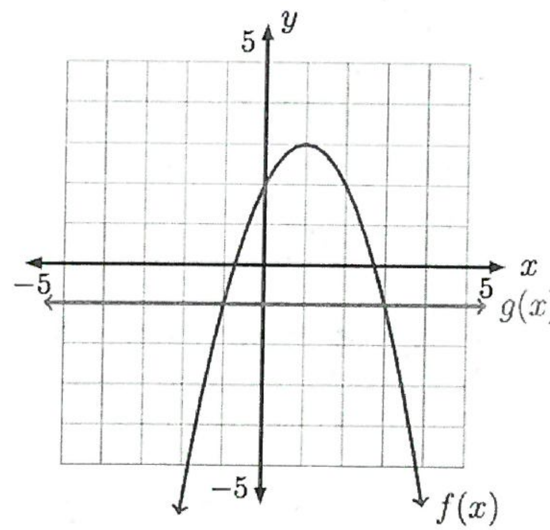
{f} x-intercept(s): $(2,0)$ $(6,0)$

{g} y-intercept(s) $(0,2)$

{h} Maximum:
relative: $y=6$
absolute: none

{i} Minimum:
relative: $-2=y$
absolute: $-2=y$

{9} Use the graph to the right to fill in the following.



{a} $f(0) =$ 2

{b} $g(-2) =$ -1

{c} When $f(x) = -1$, $x =$ $-1, 3$

{d} At what value(s) of x does $f(x) = g(x)$?

$-1, 3$

{e} On what interval is $f(x) > g(x)$?

$(-1, 3)$

{10} Use $f(x) = 3x + 2$ and $g(x) = -x + 4$ to fill in the following.

{a} $f(-2) =$ -6

{b} $g(4) =$ 0

{c} When $f(x) = -4$, $x =$ 2

$-\cancel{4} = 3x + \cancel{2}$

$\frac{-6}{3} = x = 2$

{d} Evaluate $f(2) + g(2)$

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

$= 6 + 2 - 2 + 4$

$= 10$

{e} Let $h(x) = f(x) + g(x)$. Write an equation for $h(x)$.

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

$\boxed{h(x) = 2x + 6}$

Module 4

For 11-16, solve each equation. Show your work.

{11} $\frac{2x}{5} = 6$

$2x = 30$

$\boxed{x = 15}$

{12} $\cancel{-16} = \cancel{-6} - 5x$

$-10 = -5x$

$\boxed{x = 2}$

{13} $4(x - 2) = 20$

$4x - \cancel{8} = \cancel{20}$

$4x = 28$

$\boxed{x = 7}$

{14} $\frac{1}{3}x + 3 = 9$

$\frac{1}{3}x = 6$

$\boxed{x = 18}$

{15} $4(x - 1) + 3 = 19$

$4x - 4 + 3 = 19$

$4x - 1 = 19$

$4x = 20$

$\boxed{x = 5}$

{16} $\cancel{3x} - 5 = \cancel{6x} + 7$

$-12 = 3x$

$\boxed{x = -4}$

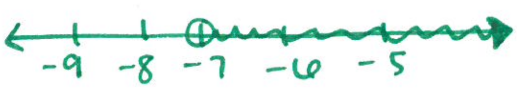
For 17-~~28~~ 18, solve each inequality and mark the solution on a number line.

{17} $\cancel{5x} - 6 < \cancel{7x} + 8$

$-6 < 2x + 8$

$-14 < 2x$

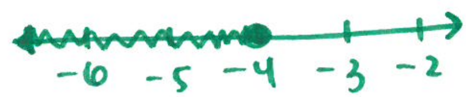
$\boxed{x > -7}$



{18} $-3x \cancel{- 2} \geq \cancel{10}$

$-3x \geq 12$

$\boxed{x \leq -4}$



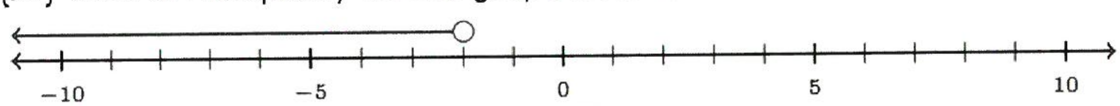
{19} Solve for B: $2B + 3C = D$

$B = \frac{D - 3C}{2}$

{20} Solve for x: $y = mx + b$

$\frac{y - b}{m} = x$

{21} Write an inequality for the graph below:



$\boxed{x < -2}$