

Which scenario represents exponential growth?

Use this space for computations.

- (1) A water tank is filled at a rate of 2 gallons/minute.
- (2) A vine grows 6 inches every week. *linear*
- (3) A species of fly doubles its population every month during the summer. *multiplies (exponential)*
- (4) A car increases its distance from a garage as it travels at a constant speed of 25 miles per hour. *linear*

multiply/divide grows or decays rapidly

12 What is the minimum value of the function $y = |x + 3| - 2$?

- (1) -2
- (2) 2
- (3) 3
- (4) -3

X	Y
-6	1
-5	0
-4	-1
<u>-3</u>	<u>-2</u>
-2	-1
-1	0
0	1

vertex (at -3, -2) *minimum*

* 13 What type of relationship exists between the number of pages printed on a printer and the amount of ink used by that printer?

- (1) ~~positive correlation, but not causal~~
- (2) positive correlation, and causal
- (3) ~~negative correlation, but not causal~~
- (4) ~~negative correlation, and causal~~

as pages go up ↑ amount of ink used goes ↑ This does represent cause + effect.

14 A computer application generates a sequence of musical notes using the function $f(n) = 6(16)^n$, where n is the number of the note in the sequence and $f(n)$ is the note frequency in hertz. Which function will generate the same note sequence as $f(n)$?

- (1) $g(n) = 12(2)^{4n}$
- (2) $h(n) = 6(2)^{4n}$
- (3) $p(n) = 12(4)^{2n}$
- (4) $k(n) = 6(8)^{2n}$

use calculator trick like #1

X	$6(16)^x$	$6(2)^{4x}$
0	6	6
1	96	96
2	1536	1536

[5]

15 Which value of x is a solution to the equation $13 - 36x^2 = -12$?

Use this space for computations.

(1) $\frac{36}{25}$

(3) $-\frac{6}{5}$

(2) $\frac{25}{36}$

(4) $-\frac{5}{6}$

↑ substitute for x
 $13 - 36(\frac{25}{36})^2 = -12$ X
 $13 - 36(\frac{25}{6})^2 = -12$ X
 $13 - 36(\frac{6}{5})^2 = -12$ X

*16 Which point is a solution to the system below?

① $\frac{2y}{a} < -\frac{12x}{5} + \frac{4}{a}$ $y < -6x + 2$
 ② $y < -6x + 4$

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

(3) $(-\frac{1}{2}, 5)$

(2) (0,6)

(4) $(-3, 2)$

check by substitution

① $y < -6x + 2$
 $2 < -6(-3) + 2$
 $2 < 20$ ✓
 ↑
 less than

② $y < -6x + 4$
 $2 < -6(-3) + 4$
 $2 < 22$ ✓

17 When the function $f(x) = x^2$ is multiplied by the value a , where $a > 1$, the graph of the new function, $g(x) = ax^2$

- (1) opens upward and is wider
- ② opens upward and is narrower
- (3) opens downward and is wider
- (4) opens downward and is narrower

Test it! Look on calc
 $y_1 = x^2$ ↕
 if $a=5$ $y_2 = 5x^2$ ↕

18 Andy has \$310 in his account. Each week, w , he withdraws \$30 for his expenses. Which expression could be used if he wanted to find out how much money he had left after 8 weeks?

(1) $310 - 8w$

(3) $310w - 30$

(2) $280 + 30(w - 1)$

④ $280 - 30(w - 1)$

my expression

$310 - 30w$

$310 - 30(8) = 70$

$w=8$

$310 - 8(8) = ? 246$

$310(8) - 30 = 2480$

$280 + 30(8 - 1) = 490$

$280 - 30(8 - 1) = 70$ ✓

(Test to see which is = to mine)

27 Solve the inequality below:

y 's

$$\frac{1.8 - 0.4y \geq 2.2 - 2y}{-1.6 \quad -1.6}$$

$$\frac{-0.4y \geq 0.4 - 2y}{+ 2y \quad + 2y}$$

#'s

$$\frac{1.6y \geq 0.4}{1.6 \quad 1.6}$$

$y \geq 0.25$

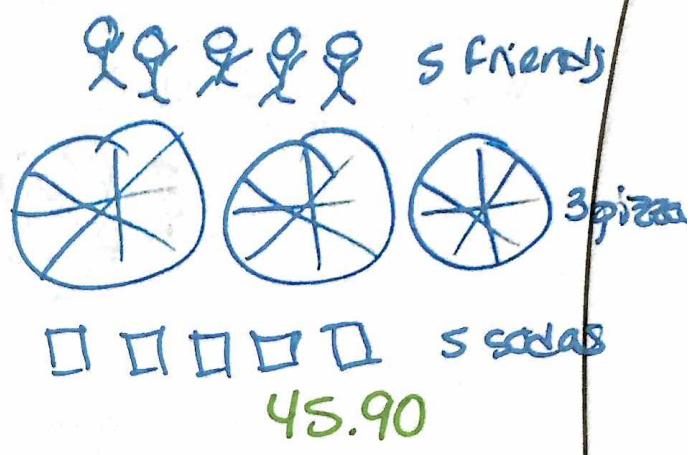
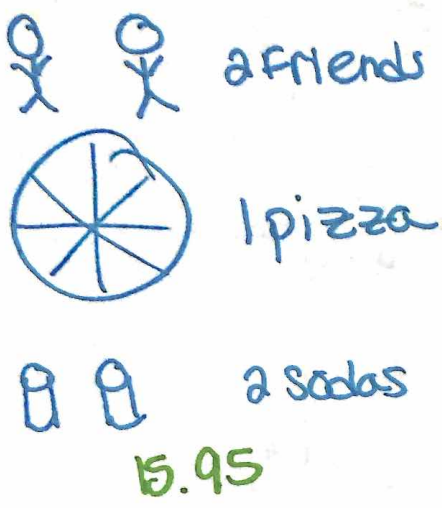
28 Jakob is working on his math homework. He decides that the sum of the expression $\frac{1}{3} + \frac{6\sqrt{5}}{7}$ must be rational because it is a fraction. Is Jakob correct? Explain your reasoning.

$$\frac{1}{3} + \frac{6\sqrt{5}}{7} = 2.249963028$$

Jakob is wrong b/c when you add them you get an irrational #. This is irrational because it goes on forever w/ no pattern

14 Two friends went to a restaurant and ordered one plain pizza and two sodas. Their bill totaled \$15.95. Later that day, five friends went to the same restaurant. They ordered three plain pizzas and each person had one soda. Their bill totaled \$45.90.

Write and solve a system of equations to determine the price of one plain pizza. [Only an algebraic solution can receive full credit.]



///	^x soda	+	^y pizza	=	Total
2 friends	2x	+	1y	=	15.95
5 friends	5x	+	3y	=	45.90

$$2x + 1y = 15.95$$

$$\begin{array}{r} -2x \\ \hline \end{array}$$

$$5x + 3y = 45.90$$

$$1y = 15.95 - 2x$$

$$5x + 3(15.95 - 2x) = 45.90$$

$$1y = 15.95 - 2(1.95)$$

$$(5x) + 47.85 - (6x) = 45.90$$

$$1y = 12.05$$

$$\begin{array}{r} -1x + 47.85 \\ -47.85 \\ \hline \end{array} = \begin{array}{r} 45.90 \\ -47.85 \\ \hline \end{array}$$

1 plain pizza cost \$12.05.

$$\begin{array}{r} -1x \\ \hline -1 \end{array} = \begin{array}{r} -1.95 \\ \hline -1 \end{array}$$

$$x = 1.95$$