

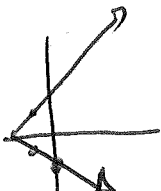
#1-7 Identify the smallest subset of the real numbers that contains the given number.

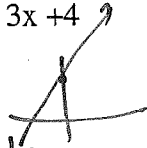
- 1) 0.255 2) $\frac{4}{9}$ 3) π 4) 0 whole number
 rational rational irrational
- 5) $\sqrt{34}$ 6) 5 7) -10
 rational natural integers

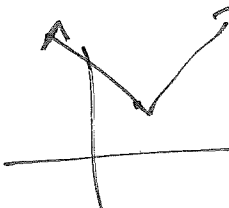
#8 Know the definitions of the subsets of the real numbers.


- a) Natural/Counting numbers b) Whole numbers c) Integers
 d) Rational numbers e) Irrational numbers

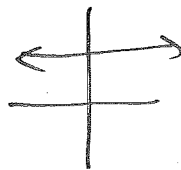
#9-15 Determine whether each of the following are functions or not.

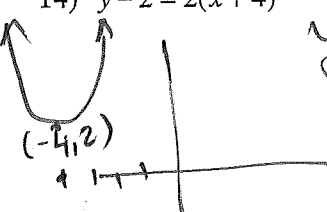
9) $x = 4$ 
~~yes~~
 no

10) $y = 3x + 4$ 
 yes

11) $y = |x + 3|$ 
 yes

12) $|y| = x + 2$ 
 no
 $y = \pm(x+2)$

13) $y = 3$ 
 yes

14) $y - 2 = 2(x + 4)^2$ 
 yes

15) $\{(2,3), (3,3), (4,3), (5,3)\}$
 yes

#16-19 State whether each sequence is arithmetic, geometric or neither. Then find the common difference, d , for each arithmetic sequence and the common ratio, r , for each geometric sequence.

- 16) 5, 15, 45, 135, ...
 geometric
 $r = 3$

- 17) 1, 4, 9, 16, ...
 neither

- 18) 1, -2, -5, -8, ...
 arithmetic
 $d = -3$

- 19) $\frac{1}{2}, \frac{3}{2}, \frac{9}{2}, \frac{27}{2}, \dots$
~~neither~~ geometric
 $r = 3$

#20 and 21 Write a recursive formula to generate each sequence. Then find the indicated term.

- 20) -15, -11, -7, -3, ... Find the 10th term
 $u_1 = -15$
 $u_n = u_{n-1} + 4, n \geq 2$
 or explicit
 $u_n = -15 + (n-1) \cdot 4$
 $u_{10} = -15 + 9 \cdot 4$
 $u_{10} = 21$
- 21) -2, 4, -8, 16, ... Find the 15th term
 $u_1 = -2$
 $u_n = -2(2)^{n-1}$
 $u_{15} = -2(2)^{14}$
 $u_{15} = -2(16384)$
 $u_{15} = -32768$

22) Consider this sequence: 3, 7, 11, 15, ...

a. Is this sequence arithmetic or geometric?

b. Write the recursive formula that generates this sequence. Use u_1 for the starting term.

$$u_1 = 3 \quad u_n = u_{n-1} + 4, n \geq 2$$

c. What is the 128th term?

$$u_n = 3 + (n-1) \cdot 4$$

$$u_{128} = 3 + 127 \cdot 4 = \boxed{511}$$

d. Which term has the value 159?

$$3 + (n-1) \cdot 4 = 159$$

$$(n-1) \cdot \frac{4}{4} = \frac{156}{4} \quad n-1 = 39$$

$$\boxed{n=40}$$

Find an equation of each linear function given the following information.

23) Contains (7, -2) and is perpendicular to $y = \frac{2}{5}x + 6$.

$$m = -\frac{5}{2} \quad \text{at } (7, -2)$$

$$y - (-2) = -\frac{5}{2}(x - 7)$$

$$y + 2 = -\frac{5}{2}x + \frac{35}{2}$$

$$y = -\frac{5}{2}x + \frac{31}{2}$$

24) Parallel to $3x + 2y = 12$ and has an x-intercept of -7.

$$m = -\frac{3}{2}$$

$$(-7, 0)$$

$$y - 0 = -\frac{3}{2}(x + 7)$$

$$\boxed{y = -\frac{3}{2}(x + 7)}$$

$$\boxed{y = -\frac{5}{2}x + \frac{31}{2}}$$

$$\frac{2y}{2} = \frac{-3x + 12}{2}$$

$$\boxed{y = -\frac{3}{2}x + 6}$$

25) Vertical through (-5, 3).

$$\boxed{x = -5}$$

26) Contains (-2, 11) and (1, -4)

$$m = \frac{11 - (-4)}{-2 - 1} = \frac{15}{-3} = \boxed{-5}$$

$$y + 4 = -5(x - 1)$$

$$y = -5x + 5 - 4$$

$$\boxed{y = -5x + 1}$$

27) Has a slope of -7 and contains (5, -4).

For each sequence, state the recursive and explicit formulas, and the indicated term.

28) -17, -13, -9, ... find u_{12}

29) 5, 9, 13, 17, ... find u_{43}

30) $\frac{1}{5}, 1, 5, \dots$ find u_9

31) 4, -12, 36, ... find u_8