Functions and Function Notation for each the following functions, evaluate 21, answer is 8, 6, 4, 2, 0

22, answer is 14, 11, 8, 5, 2

23, answer is 15, 18, 3, -2, 1

24, answer is 15, 18, 3, -2, 1

25, answer is 13, 9, 3, -15, -5

26, answer is 80, 6, 0, 6, 84, 4

27, answer is 4, 3 + square root of 2(4.4), 3 + square root of 2(4.4), 3 + square root of 3(4.7), 5, 3 + square root of 5(5.2)

28, answer is 4cuberootof4, 4cuberootof3, 4cuberootof2, 3, 4

29, answer is -4, -6, -6, -4, 0

30, answer is 9, 8, 3, 0, 5

31, answer is 5, -2, -1, -1, 0.2

32, answer is 4, 1.5, -2, 0.5, 0

33, answer is 0.25, 0.5, 1, 2, 4

 $34,\, {\rm answer} \ {\rm is} \ 0.11,3,0.33,3,9$ 

35 suppose  $f(x) = x^2+8x-4$  the answer is A -6 B -16

36 support f(x) = x2+x+3. compute the following the answer is A 28. B -18

37 let f(t) = 3t + 5 the answer is A 5. B 1.66

38 let g(p) = 6-2p the answer is A 6. B 3

43 Write the equation of the circle centered at (3,9) with radius 6. the answer is (x-3) 2 square + (y+9) 2 square

44 Write the equation of the circle centered at (9,8) with radius 11. the answer is (x-9)2square + (y+8)2square

Domain and Range Find the domain of each function

7 f(x)=3 square root of x 2 the answer is close(2, +infinitive)

8 f(x) = 5 square root of x + 3 the answer is close(-3, +infinitive)

9 f(x) = 3 - square root of 6 - 2x the answer is open(-infinitive, 3)close

10 f(x) = 5 square root of 10-2x the answer is open(-infinitive, 3)close

11 f(x) = 9 divide by x - 6 the answer is (-infinitive, 6)U(6, +infinitive) 12

f(x) = 6dividebyx - 8 the answer is (-infinitive, 8)U(8, +infinitive)13

f(x) = 3x + 1 divide by 4x - 2 the answer is (-infinitive, -0.5)U(-0.5, +infinitive)

14 f(x) = 5x + 3 divide by 4x - 1 the answer is (-infinitive, 3)U(3, +infinitive)

15 f(x) = 6 divide by x - 8 the answer is (-4, 4)U(4, +infinitive)

16 f(x) = 6 divide by x - 8 the answer is (-5, 6)U(6, +infinitive)

17 f(x) = x - 3 divide by(x-2)(x+11) the answer is (-infinitive, -11)U(-11, 2)U(2, +infinitive)

18 f(x) = squarerootof x - 8 divide by x - 6 the answer is (-5, 6), (6, infinitive)Given each function, evaluate:

Fiven each function, evaluate:

 $\begin{array}{l} f(1), f(0), f(2), f(4) \ 19 \ f(x) = 7x + 3ifx < 07x + 6ifx0 theanswerisf(-1) = \\ 4f(2) = 20f(x) = 4x9ifx < 0 theanswerisf(-1) = -13f(x) = 4x18ifx0 theanswerisf(2) = \\ 12 \end{array}$ 

f(x)=x22 if xj2 f(2)=3 21 f(x)=4+-x5- if x2 f(2) = 1 or 11 22 f(x) = 4x -9 if xj0 f(-1)= 5 f(x) = square root of x +1 if x  $\xi=1$ 

f(2) = square root of 3 24

f(x) = x cube if x i0 the answer is 0 f(x) = 4 if 0 lass-than and equal x lassthan and equal 3 f(x) = 2x + 1 if x  $\vdots$  3 f(4) = 13 rate of change and behavior of Graphs Find the average rate of change of each function on the interval specified. 5

f(x) = x square on [1, 5] the answer is = 6

6 q(x) = x cube on [-4, 2] the answer is = 12

7 g(x) = 3x cube 1 on [-3, 3] the answer is 27

 $8~{\rm h}({\rm x})=5~2{\rm x}$  square on [-2, 4] the answer is - 1.5 9 k(t) = 6t square + 4/t cube on [-1, 3] the answer is 13.037 10

 $p(t) = (t \text{ square } 4t + 1)/t \text{ square } + 3 \text{ on } [-3, 1] t_2 + 3 the answer is 0.58$ 

Find the average rate of change of each function on the interval specified. Your answers will be expressions involving a parameter (b or h). 11 f (x) = 4x square 7 on [1, b] the answer is 4b square - 7 + 3 divide by b-1 12 g(x) = 2x square 9 on [4, b] the answer is 2b square - 9 divide by b-4 13 h(x) = 3x + 4 on [2, 2+h] (3h + 10 - 10)(2 + h - 2) 14 k(x) = 4x - 2 on [3, 3+h] the answer is (4h + 7)(h)

15 a(t) = 1 divide by t+4 on [9,9+h] the answer is (-h + 22)(9h + 117) 16 a(t) = 1 divide by t+3 on [1,1+h] 17 g(x) = 3x cube on [1, 1+h] the answer is 2b square 3 18 g(x) = 4x cube on [2, 2, 2+4] the answer is 4h square

20 g(x) = 3x square 2 on [x, x+h] the answer is 2b square - 9 divide by b-4 Composition of functions Given each pair of functions, calculate f (g (0)) and g (f (0)). 1 f(x)=4x 8,+g(x)=7-x square the answer is f(g(0)) = -4x +36 g(f(0)) = -4x +152 f(x)=5x+7,+g(x)=4-2x square the answer f(g(0)) = -10x + 37 G(f(0)) = -10x - 103 f(x)= x 4,+g(x)=12-x cube the answer is f(g(0)) = x + 4 square root of - x g(f(0)) = 12- square root of (x-4) cube

4 f(x) = 1/x+2, g(x) = 4x+3 the answer is f(g(0)) = 1/4x+5 g(f(0)) = 7

For each pair of functions, find f (g (x)) and g (f (x)). Simplify your answers. 21 f(x) = 1/x-6, g(x) = 7/x + 6 f(g(0)) = (1/7/x + 6) - 6 g(f(0)) = 7(x-6)/6x-3522 f(x) = 1/x-4, g(x) = 2/x+4 f(g(0)) = x/2 g(f(0)) = 2x

23 f(x)=x square +1,g(x)= square root of x + 2 f(g(0)) = x +3 g(f(0)) = x square root of 3

24

f(x)= square root of x + 2,g(x)=x square + 3 f(g(0)) = x square root of 3 + 2 g(f(0)) = x + 7

1.5 Transformation of function

11

Write a formula for f (x) = x shifted up 1 unit and left 2 units. the answer is (2,0) 12

Write a formula for f (x) = -x— shifted down 3 units and right 1 unit. the answer is x = 2 or -2 then (-3,3) or (-1,-3) Write a formula for f (x) = 1/x shifted down 4 units and right 3 units. the answer is x 1 than (4,-4) Write a formula for f (x) = 1/x square shifted up 2 units and left 4 units. the answer is x = 1 than (-3, 2)