

Chapter 2 Test Review

TO RECEIVE CREDIT, ALL PROBLEMS MUST BE DONE ON SEPARATE PAPER AND YOU MUST SHOW ALL WORK

1) Determine whether the equation defines y as a function of x .

a) $y = \frac{1}{x}$

c) $y = \frac{4x-1}{x}$

e) $y^2 + x = 4$

b) $y^2 = 4 - x^2$

d) $8x + x^2 - 59 = y$

2) Find the value for the function.

a) Find $f(4)$ when $f(x) = x^2 + 5x - 1$

d) Find $f(x + h)$ when $f(x) = 3x^2 - 4x - 4$

b) Find $f(2)$ when $f(x) = \frac{x^2-3}{x-1}$

e) Find $f(x - 2)$ when $f(x) = 3x^2 + 5x + 3$

c) Find $f(2x)$ when $f(x) = \sqrt{7x^2 - 3x}$

3) The function $P(d) = 1 + \frac{d}{33}$ gives the pressure, in atmospheres (atm), at a depth d feet in the sea. Find the pressure at 55 feet.

4) Find the domain of the function.

a) $f(x) = \frac{x}{x^2+5}$

b) $h(x) = \frac{x-3}{x^3-25x}$

c) $f(x) = \sqrt{10-x}$

d) $g(x) = \frac{x}{\sqrt{x+7}}$

5) For the given functions f and g , find the requested function and state its domain.

a) $f(x) = 9 - 6x$; $g(x) = -2x + 6$

Find $f + g$.

b) $f(x) = 6x - 7$; $g(x) = 9x - 8$

Find $f - g$.

c) $f(x) = 2x - 4$; $g(x) = 9x - 2$

Find $f \cdot g$.

d) $f(x) = 5x + 1$; $g(x) = 6x - 5$

Find $\frac{f}{g}$.

e) $f(x) = 2x^3 - 1$, $g(x) = 4x^2 - 3$

Find $f \cdot g$.

f) $f(x) = \sqrt{x}$; $g(x) = 5x - 2$

Find $\frac{f}{g}$.

g) $f(x) = \sqrt{x+5}$; $g(x) = \frac{2}{x}$

Find $f \cdot g$.

h) $f(x) = 3x + 5$; $g(x) = 4x - 1$

Find $\frac{f}{g}$.

6) Find and simplify the difference quotient of f , $\frac{f(x+h)-f(x)}{h}$ $h \neq 0$, for the function.

a) $f(x) = 7x + 8$

b) $f(x) = 2x^2$

c) $f(x) = 5x + 1$

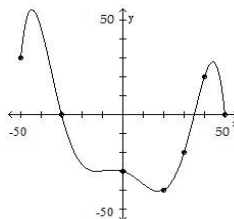
7) The graph of a function f is given. Use the graph to answer the question. Use the graph of f given below to find

a) $f(20)$.

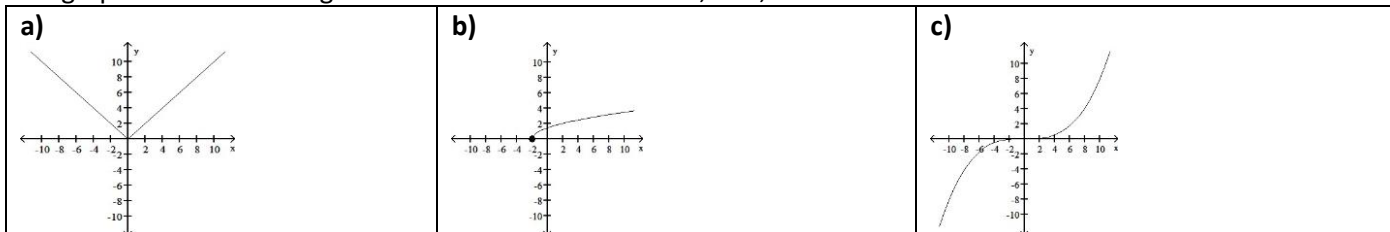
b) Is $f(-50)$ positive or negative?

c) What is the domain of f ?

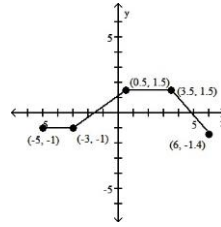
d) For what numbers is $f(x) \leq 0$?



8) The graph of a function is given. Decide whether it is even, odd, or neither.

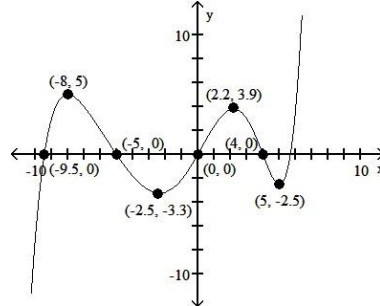


9) The graph of a function is given. Determine whether the function is increasing, decreasing, or constant on the given interval.

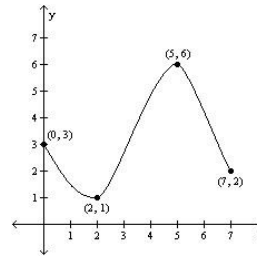


- a) $(-3, 0.5)$ b) $(0.5, 3.5)$ c) $(3.5, 6)$

10) Find the numbers, if any, at which f has a local maximum and/or a local minimum. What are the local maxima and minima?



11) For the graph of the function $y = f(x)$, find the absolute maximum and the absolute minimum, if it exists.



12) Find the average rate of change for the function between the given values.

$$f(x) = x^2 + 7x; \text{ from } 1 \text{ to } 5$$

13) Graph the function.

$$a) f(x) = \begin{cases} x + 1 & \text{if } -7 \leq x < 5 \\ -7 & \text{if } x = 5 \\ -x + 8 & \text{if } x > 5 \end{cases}$$

$$b) f(x) = \text{int}(x) + 1$$

$$c) f(x) = \begin{cases} 1 & \text{if } 0 \leq x < 3 \\ |x| & \text{if } 3 \leq x < 7 \\ \sqrt{x} & \text{if } 7 \leq x \leq 13 \end{cases}$$

14) Write the equation of a function that has the given characteristics.

a) The graph of $y = x^2$, shifted 6 units upward

b) The graph of $y = |x|$, shifted 8 units upward

c) The graph of $y = \sqrt{x}$, shifted 7 units to the right

15) Graph the function by starting with the graph of the parent function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

$$a) f(x) = (x - 3)^2 + 3$$

$$b) f(x) = 2x^2$$

$$c) f(x) = 3(x + 1)^2 - 2$$

16) Use the graph of $f(x) = x^2$ to sketch the graph of the indicated equation.

$$y = -\frac{1}{3}f(x + 5)^2 + 2$$