Classroom Voting Questions: Precalculus

Functions and Change

1. In the given equation, is y a function of x?

$$y = x + 2$$

   (a) Yes, and I am very confident
   (b) Yes, but I am not very confident
   (c) No, but I am not very confident
   (d) No, and I am very confident

2. In the given equation, is y a function of x?

$$x + y = 5$$

   (a) Yes, and I am very confident
   (b) Yes, but I am not very confident
   (c) No, but I am not very confident
   (d) No, and I am very confident

3. In the given equation, is y a function of x?

$$x^3 + y = 5$$

   (a) Yes, and I am very confident
   (b) Yes, but I am not very confident
   (c) No, but I am not very confident
   (d) No, and I am very confident

4. In the given equation, is y a function of x?

$$x^2 + y^2 = 5$$

   (a) Yes, and I am very confident

(b) Yes, but I am not very confident

(c) No, but I am not very confident

(d) No, and I am very confident

5. The set of points (x, y) which satisfy the equation $(x-1)^2 + (y+3)^2 = 5^2$ can be represented via a mathematical function relating the x and y variables.

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.

6. Does the table represent a function, $y = f(x)$?

x	1	2	3	4
$f(x)$	2	3	2	4

(a) Yes, and I am very confident

(b) Yes, but I am not very confident

(c) No, but I am not very confident

(d) No, and I am very confident

7. Does the table represent a function, $y = f(x)$?

x	1	2	2	4
$f(x)$	2	3	1	3

(a) Yes, and I am very confident

(b) Yes, but I am not very confident

(c) No, but I am not very confident

(d) No, and I am very confident

8. Does this sentence describe a function? Wanda is two years older than I am.

(a) Yes, and I am very confident

(b) Yes, but I am not very confident

(c) No, but I am not very confident

(d) No, and I am very confident

9. The rule which assigns to each college student (at this exact point in time) a number equal to the number of college credits completed by that student is a function.

   (a) True, and I am very confident.

   (b) True, but I am not very confident.

   (c) False, but I am not very confident.

   (d) False, and I am very confident.

10. The rule which assigns to each car (at this exact point in time) the names of every person that has driven that car is a function.

    (a) True, and I am very confident.

    (b) True, but I am not very confident.

    (c) False, but I am not very confident.

    (d) False, and I am very confident.

11. Could this table represent a linear function?

x	1	2	3	4
$f(x)$	1	2	4	8

    (a) Yes, and I am very confident

    (b) Yes, but I am not very confident

    (c) No, but I am not very confident

    (d) No, and I am very confident

12. Could this table represent a linear function?

x	1	2	3	4
$f(x)$	-12	-9	-6	-3

    (a) Yes, and I am very confident

    (b) Yes, but I am not very confident

    (c) No, but I am not very confident

    (d) No, and I am very confident

13. Could this table represent a linear function?

x	1	2	4	8
$f(x)$	12	14	16	18

(a) Yes, and I am very confident

(b) Yes, but I am not very confident

(c) No, but I am not very confident

(d) No, and I am very confident

14. Could this table represent a linear function?

x	1	2	4	8
$f(x)$	10	9	7	3

(a) Yes, and I am very confident

(b) Yes, but I am not very confident

(c) No, but I am not very confident

(d) No, and I am very confident

15. True or False? All linear functions are examples of direct proportionality.

(a) True, and I am very confident

(b) True, but I am not very confident

(c) False, but I am not very confident

(d) False, and I am very confident

16. Find the domain of the function $f(x) = \frac{1}{x-2}$.

(a) $x = 2$

(b) $x \neq 2$

(c) $x < 2$

(d) all real numbers

17. Find the domain of the function $g(t) = \frac{2+t}{\sqrt{t-7}}$.

(a) $t > 7$

(b) $t \geq 7$

(c) $t = 7$

(d) all real numbers

18. Which of the following functions has its domain identical with its range?

(a) $f(x) = x^2$
(b) $g(x) = \sqrt{x}$
(c) $h(x) = x^4$
(d) $i(x) = |x|$

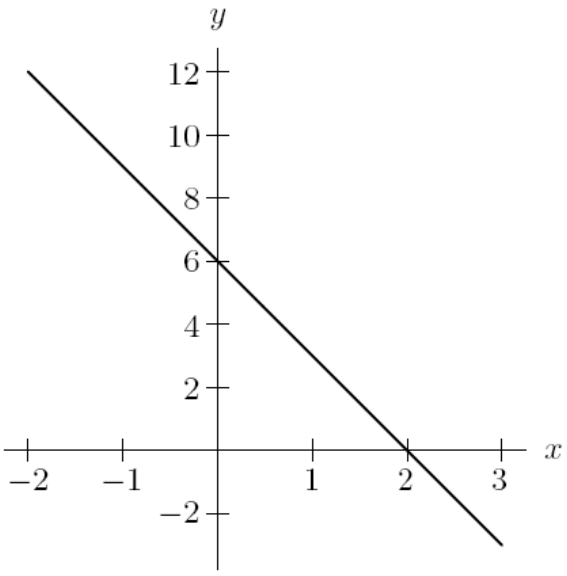
19. The slope of the line connecting the points (1,4) and (3,8) is

(a) $-\frac{1}{2}$
(b) -2
(c) $\frac{1}{2}$
(d) 2

20. Which one of these lines has a different slope than the others?

(a) $y = 3x + 2$
(b) $3y = 9x + 4$
(c) $3y = 3x + 6$
(d) $2y = 6x + 4$

21. The graph below represents which function?



(a) $y = 6x + 6$

(b) $y = -3x + 6$

(c) $y = -3x + 2$

(d) $y = -x + 6$

(e) $y = 6x - 2$

(f) $y = x - 2$

22. Which of the following functions is not increasing?

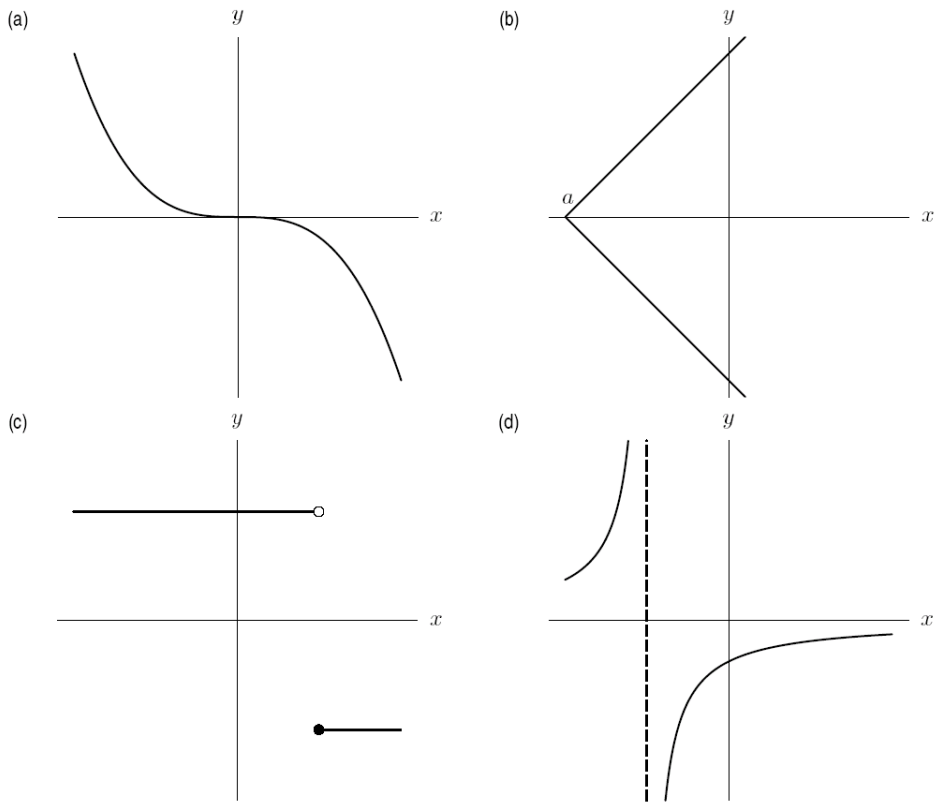
(a) The elevation of a river as a function of distance from its mouth

(b) The length of a single strand of hair as a function of time

(c) The height of a person from age 0 to age 80

(d) The height of a redwood tree as a function of time

23. Which of these graphs does not represent y as a function of x?



24. Calculate the average rate of change of the function $f(x) = x^2$ between $x = 1$ and $x = 3$.

(a) 8

(b) 4

(c) $\frac{1}{4}$

(d) 0

25. The EPA reports the total amount of Municipal Solid Waste (MSW), otherwise known as garbage, produced in the U.S. for the years 2005 through 2009:

Year	2005	2006	2007	2008	2009
Millions of tons	252.4	251.3	255	249.6	243

(source: http://www.epa.gov/osw/nonhaz/municipal/)

What are the appropriate units for the average rate of change in the amount of garbage produced between any two given years?

(a) millions of tons

(b) tons

(c) millions of tons per year

(d) tons per year

26. The EPA reports the total amount of Municipal Solid Waste (MSW), otherwise known as garbage, produced in the U.S. for the years 2005 through 2009:

Year	2005	2006	2007	2008	2009
Millions of tons	252.4	251.3	255	249.6	243

(source: http://www.epa.gov/osw/nonhaz/municipal/)

What is the average rate of change in the amount of MSW produced from 2005 to 2007?

(a) 2.6 million tons per year

(b) 2.6 million tons

(c) 1.3 million tons

(d) 1.3 million tons per year

27. The EPA reports the total amount of Municipal Solid Waste (MSW), otherwise known as garbage, produced in the U.S. for the years 2005 through 2009:

Year	2005	2006	2007	2008	2009
Millions of tons	252.4	251.3	255	249.6	243

(source: http://www.epa.gov/osw/nonhaz/municipal/)

What is the average rate of change in the amount of MSW produced from 2007 to 2009?

(a) -6 million tons per year

(b) 6 million tons per year

(c) -12 million tons per year

(d) 12 million tons per year

28. Find the difference quotient $\frac{f(x+h)-f(x)}{h}$ for the function $f(x) = 2x^2 - x + 3$. Simplify your answer.

(a) $\frac{2h^2-h+3}{h}$

(b) $2h - 1$

(c) $\frac{4xh+2h^2-2x+h+6}{h}$

(d) $4x + 2h - 1$

29. When the temperature is $0°C$ it is $32°F$ and when it is $100°C$ it is $212°F$. Use these facts to write a linear function to convert any temperature from Celsius to Fahrenheit.

(a) $C(F) = \frac{5}{9}F - \frac{160}{9}$

(b) $F(C) = C + 32$

(c) $F(C) = \frac{5}{9}C - \frac{160}{9}$

(d) $F(C) = \frac{9}{5}C + 32$

30. Let $f(x) = 1 + 4x^2$. True or False: $f(\frac{1}{2}) = \frac{f(1)}{f(2)}$.

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.

31. Let $f(x) = 1 + 4x^2$. True or False: $f(a + b) = f(a) + f(b)$.

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.

32. Let $f(x) = \frac{1}{x+2}$. Find a value of x so that $f(x) = 6$

(a) $-\frac{11}{6}$

(b) $\frac{13}{6}$

(c) $\frac{1}{8}$

(d) none of the above

33. True or False: $\sqrt{x^2} = x$.

(a) True, and I am very confident.

(b) True, but I am not very confident.

(c) False, but I am not very confident.

(d) False, and I am very confident.