

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) $i(x) = |x|$

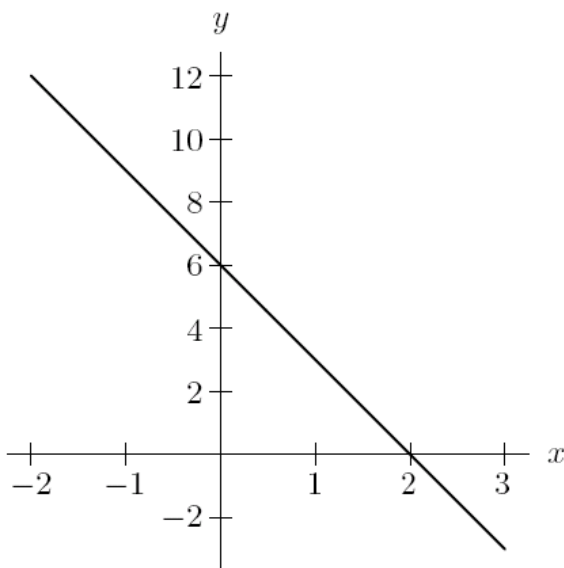
19. The slope of the line connecting the points (1,4) and (3,8) is

- (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?



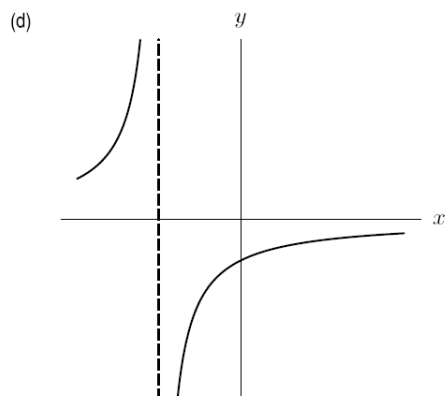
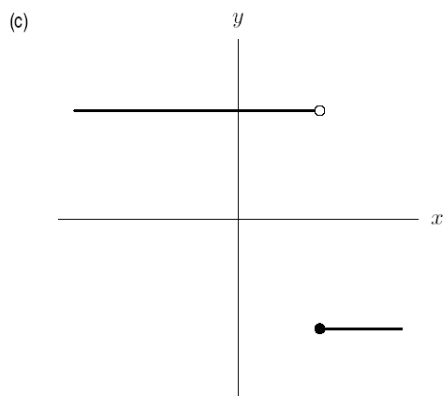
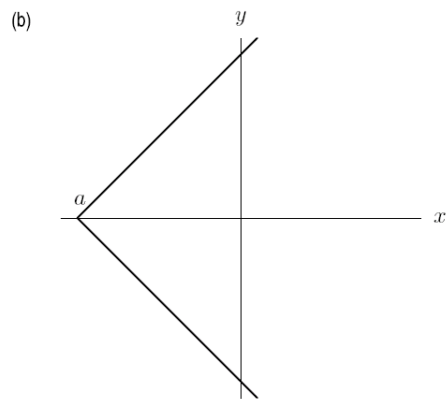
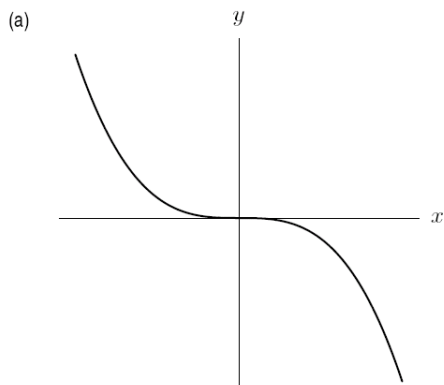
- (a) $y = 6x + 6$

- (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 $0^\circ C$ it is $32^\circ F$ and when it is $100^\circ C$ it is $212^\circ F$. 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.