

Tishk International University
Architecture Department
First Grade- Calculus
Fall semester 2024-2025

Question Bank

Chapter -1- and -2-

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Question -1-

Which equation is NOT a linear function?

- A) $y = 2x + 5$
- B) $y = -3x$
- C) $y = x^2 - 4$
- D) $y = 0.5x + 7$



Question -2-

What is the equation of a line with slope 4 and y-intercept -2?

- A) $y = 4x + 2$
- B) $y = 4x - 2$
- C) $y = -4x + 2$
- D) $y = -4x - 2$

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Question -3-

Which of the following relations are functions? Give reasons.

- (1) $\{(2, 1), (5, 1), (8, 1), (11, 1), (14, 1), (17, 1)\}$
- (2) $\{(2, 1), (4, 2), (6, 3), (8, 4), (10, 5), (12, 6), (14, 7)\}$
- (3) $\{(1, 3), (1, 5), (2, 5)\}$

Question -4-

The domain and range of the function f given by $f(x) = 2 - |x - 5|$, is

- (a) Domain $= (-\infty, +\infty)$, Range $= (-\infty, 1]$
- (b) Domain $= (-\infty, +\infty)$, Range $= (-\infty, 2]$
- (c) Domain $= (-\infty, +\infty)$, Range $= (-\infty, 2)$
- (d) Domain $= (+\infty)$, Range $= (-\infty, 2]$

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Question -5-

The domain and range of real function f defined by $f(x) = x - 1$ is given by

- (a) Domain $= (1, \infty)$, Range $= (0, \infty)$
- (b) Domain $= [1, \infty)$, Range $= (0, \infty)$
- (c) Domain $= [1, \infty)$, Range $= [0, \infty)$
- (d) Domain $= [1, \infty)$, Range $= [0, \infty)$

Question -6-

If $f(x) = 2\sqrt{x-1} + 5\sqrt{1-x} + (x^2+x+1)^{3/2}$ exists, then domain of $f(x)$ is

- (a) $[-1, 1]$
- (b) $\{-1, 1\}$
- (c) $\{1\}$
- (d) $(-1, 1)$

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Question -7-

If $f(x) = \sqrt{3|x| - x - 2}$, then which of the following is (are) CORRECT?

- (a) Range of $f(x)$ is $[0, \infty)$
- (b) Range of $f(x)$ is $[1, \infty)$
- (c) Domain of $f(x)$ is $(-\infty, -12] \cup [1, \infty)$
- (d) Domain of $f(x)$ is $(-\infty, 12] \cup [1, \infty)$

Question -8-

The graph of $y = 2x + 1$ passes through which point?

- A) (0, 2)
- B) (0, 1)
- C) (1, 2)
- D) (2, 0)

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Question -9-

Find the domain of the functions.

- a. $f(x) = 1 / |x^2 - 4|$
- b. $g(x) = 1 / (x^2 + 4x + 3)$
- c. $h(x) = \sqrt{x^2 + 5x - 6}$
- d. $k(x) = 1 / \sqrt{(x - 2)^2}$
- e. $j(x) = 1 / (x - \sqrt{x + 2})$

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Question -10-



Find the range of the functions.

a. $f(x) = -x^2 + 6x + 5$

b. $g(x) = |x + 3| - 2$

c. $h(x) = (x - 2) / (x + 3)$

d. $k(x) = |x^3 + 4|$

e. $j(x) = |(x + 4)(x - 2)|$

f. $l(x) = |1/(x - 3)|$

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Question -11-



Find the domain of the functions.

a) $y = \frac{2x}{|3x - 3| - 6}$

b) $y = \frac{5x - 3}{\sqrt{|x^2 + x - 2|} - 4}$

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Question -12-

Find the domain of the functions.

$$a) y = -\frac{7}{x^2 - 4x - 5}$$

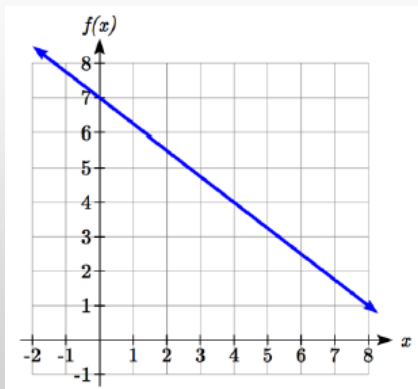
$$b) y = -\frac{x - 2}{x^2 - 5x + 6}$$

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Question -13-

Write an equation for the linear function graphed below.



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Question -14-

Given the table below write a linear equation that represents the table values.



w , number of weeks	0	2	4	6
$P(w)$, number of rats	1000	1080	1160	1240

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Question -15-

Determine if each function is increasing or decreasing.



7. $f(x) = 4x + 3$

8. $g(x) = 5x + 6$

9. $a(x) = 5 - 2x$

10. $b(x) = 8 - 3x$

11. $h(x) = -2x + 4$

12. $k(x) = -4x + 1$

13. $j(x) = \frac{1}{2}x - 3$

14. $p(x) = \frac{1}{4}x - 5$

15. $n(x) = -\frac{1}{3}x - 2$

16. $m(x) = -\frac{3}{8}x + 3$

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Question -16-



Find the slope of the line that passes through the two given points.

17. (2, 4) and (4, 10)

19. (-1, 4) and (5, 2)

21. (6, 11) and (-4, 3)

18. (1, 5) and (4, 11)

20. (-2, 8) and (4, 6)

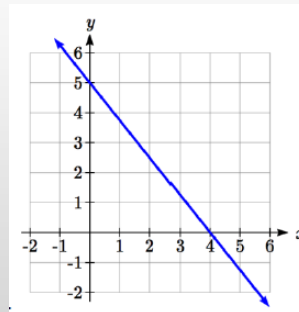
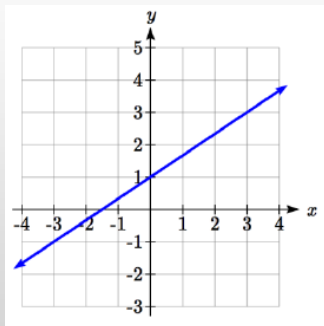
22. (9, 10) and (-6, -12)

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Question -17-



Find the slope of the lines graphed.

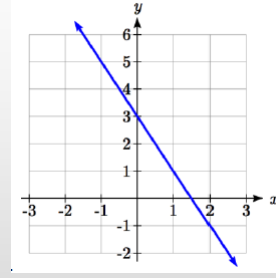
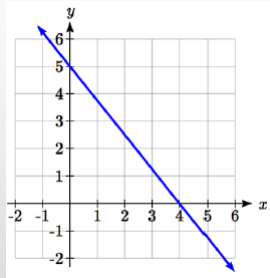
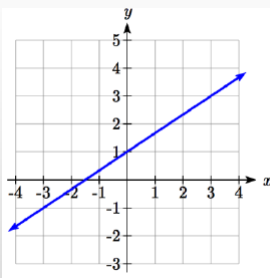


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Question -18-



Find an equation for the function graphed.



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Question -19-



Which of the following tables could represent a linear function? For each that could be linear, find a linear equation models the data.

x	$g(x)$
0	5
5	-10
10	-25
15	-40

x	$h(x)$
0	5
5	30
10	105
15	230

x	$f(x)$
0	-5
5	20
10	45
15	70

x	$k(x)$
5	13
10	28
20	58
25	73

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Question -20-



What is the equation of a line with a slope of 2 and passing through (0,3)?

- A) $y = 2x - 3$
- B) $y = 2x + 3$
- C) $y = -2x + 3$
- D) $y = 3x + 2$

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References



- Thomas-Calculus-14th-Edition
- Internet sources

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