

INSTRUCTIONS

The quiz is worth 35 points. There are 10 multiple choice (2 points) and 5 (3 points) short answer problems.

- ☐ This quiz is **open book** and **open notes**, and you may take as long as you like on it provided that you submit the quiz no later than the due date posted in our course schedule of the syllabus. You may refer to your textbook, notes, and online classroom materials, **but you may not consult anyone**.
- ☐ **You must show all of your work to receive full credit.** If you do not show work, you may earn only partial or no credit at the discretion of the professor.
- ☐ Please type or hand write your answers in the answer sheet provided. Be sure to include your name in the document. Review instructions for submitting your quiz in the Unit Quizzes Module.

If you have any questions, please contact me by e-mail.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine the slope and the y-intercept of the graph of the equation.

1) $4x - 11y - 44 = 0$

A) $m = -\frac{4}{11}; (0, 4)$

B) $m = \frac{4}{11}; (0, -4)$

C) $m = 4; (0, 44)$

D) $m = \frac{11}{4}; (0, 11)$

Evaluate the piecewise function at the given value of the independent variable.

2)

$$f(x) = \begin{cases} x - 2 & \text{if } x > -3 \\ -(x - 2) & \text{if } x \leq -3 \end{cases}$$

Determine $f(-7)$.

A) -7

B) 18

C) 9

D) -9

3)

$$g(x) = \begin{cases} \frac{x^2 - 2}{x + 1} & \text{if } x \neq -1 \\ x - 1 & \text{if } x = -1 \end{cases}$$

Determine $g(-3)$.

A) -4

B) -3

C) $-\frac{7}{2}$

D) $\frac{5}{2}$

Find the average rate of change of the function from x_1 to x_2 .

4) $f(x) = -3x^2 - x$ from $x_1 = 5$ to $x_2 = 6$

A) -34

B) $-\frac{1}{6}$

C) -2

D) $\frac{1}{2}$

5) $f(x) = \sqrt{2x}$ from $x_1 = 2$ to $x_2 = 8$

A) 7

B) $\frac{1}{3}$

C) $-\frac{3}{10}$

D) 2

Use the given conditions to write an equation for the line in point-slope form.

6) Slope = $\frac{3}{4}$, passing through (2, 3)

A) $y + 3 = \frac{3}{4}(x + 2)$

B) $y = \frac{3}{4}x + 2$

C) $y - 3 = \frac{3}{4}(x - 2)$

D) $x - 3 = \frac{3}{4}(y - 2)$

Use the given conditions to write an equation for the line in slope-intercept form.

7) Passing through (5, 5) and (2, 7)

A) $y = mx + \frac{25}{3}$

B) $y = \frac{2}{3}x + \frac{25}{3}$

C) $y = -\frac{2}{3}x + \frac{25}{3}$

D) $y - 5 = -\frac{2}{3}(x - 5)$

8) Slope = 3, passing through (4, 6)

A) $y - 6 = 3x - 4$

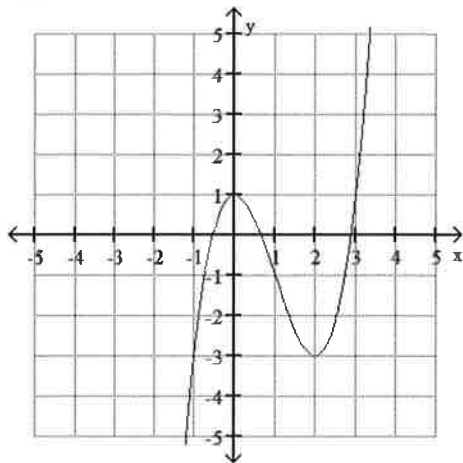
B) $y - 6 = x - 4$

C) $y = 3x + 6$

D) $y = 3x - 6$

Use the graph of the given function to find any relative maxima and relative minima.

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



A) maximum: (0, 1); minimum: none

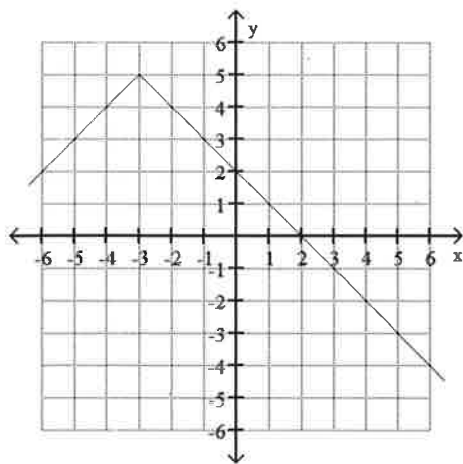
C) maximum: none; minimum: (2, -3)

B) no maximum or minimum

D) maximum: (0, 1); minimum: (2, -3)

Use the graph to determine the function's domain and range.

10)



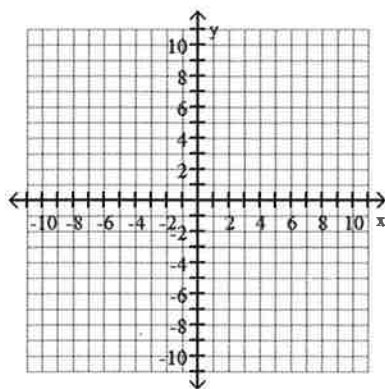
- A) domain: $(-\infty, -3]$
range: $(-\infty, 5]$
C) domain: $(-\infty, \infty)$
range: $(-\infty, 5]$

- B) domain: $(-\infty, -3)$ or $(-3, \infty)$
range: $(-\infty, 5)$ or $(5, \infty)$
D) domain: $(-\infty, \infty)$
range: $(-\infty, \infty)$

SHORT ANSWER. You must show all your work to receive full credit.

Begin by graphing the standard quadratic function $f(x) = x^2$. Then use transformations of this graph to graph the given function. Describe the transformations in words.

11) $h(x) = -(x - 2)^2 - 4$

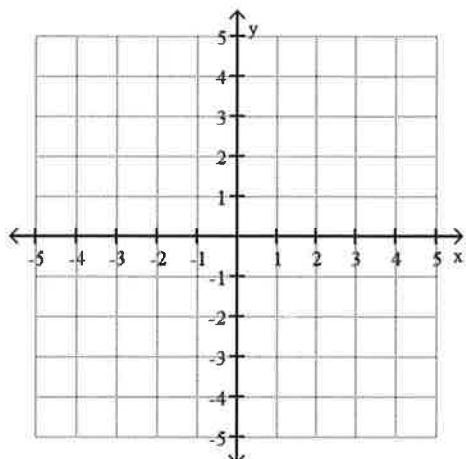


Find the slope then describe what it means in terms of the rate of change of the dependent variable per unit change in the independent variable.

- 12) The linear function $f(x) = -5.9x + 22$ models the percentage of people, $f(x)$, who eat at fast food restaurants each week x years after 1998.

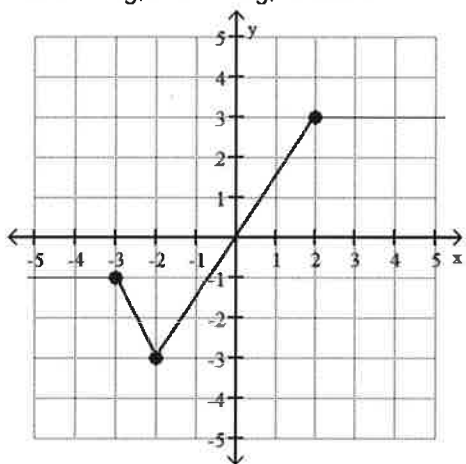
Graph the equation.

13) $4x + 5y - 18 = 0$



Identify the intervals where the function is changing as requested.

14) Decreasing, increasing, and constant.



Solve the problem.

- 15) A salesperson gets a commission of \$1000 for the first \$10,000 of sales, and then \$500 for each additional \$10,000 or partial of sales. Let $S(x)$ represent the commission on x dollars of sales. Find the value of $S(85,000)$.