Practice Exam 1 - 1314 Online - Spr18

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. Write your choice in the space provided. No work will be graded. No partial credit.

Solve the problem.

1) The formula $N = 4x^2 + 5x + 2$ represents the number of households N, in thousands, in a certain city that have a computer x years after 1990. According to the formula, in what year were there 176 thousand households with computers in this city? 1) _____

A) 1997 B) 1996 C) 1994 D) 1995

Solve the absolute value equation or indicate that the equation has no solution.

2) $|8x + 6| + 4 = 7$ 2) _____

A) $\{-\frac{3}{2}, -\frac{1}{2}\}$ B) $\left\{-\frac{9}{8}, -\frac{3}{8}\right\}$ C) $\left\{\frac{3}{8}, \frac{9}{8}\right\}$ D) $\varnothing$

Determine whether the relation is a function.

3) {(3, -9), (3, 3), (4, 9), (7, 4), (10, 7)} 3) _____

A) Not a function B) Function

Evaluate the function at the given value of the independent variable and simplify.

4) $f(x) = \sqrt{x + 6}$; $f(-2)$ 4) _____

A) -2 B) 1.41

C) 2 D) not a real number

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

5) $h(x) = \begin{cases} \frac{x^2 - 7}{x + 6} & \text{if } x \neq -6 \\ x - 2 & \text{if } x = -6 \end{cases}$; $h(-6)$ 5) _____

A) 8 B) -4 C) undefined D) -8

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

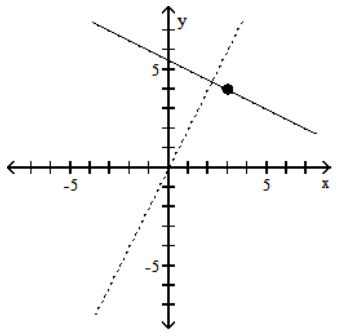
6) Passing through (-8, -3) and (-4, -8) 6) _____

A) $y = \frac{5}{4}x - 13$ B) $y = mx - 13$

C) $y = -\frac{5}{4}x - 13$ D) $y + 3 = -\frac{5}{4}(x + 8)$

Find an equation for the line with the given properties.

7) The solid line L contains the point (3, 4) and is perpendicular to the dotted line whose equation is y = 2x. Give the equation of line L in slope-intercept form. 7) _____



A) $y - 4 = -\frac{1}{2}(x - 3)$

B) $y - 4 = 2(x - 3)$

C) $y = \frac{1}{2}x + \frac{11}{2}$

D) $y = -\frac{1}{2}x + \frac{11}{2}$

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

8) $f(x) = -3x^2 - x$ from $x_1 = 5$ to $x_2 = 6$ 8) _____

A) -2

B) -34

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

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

Find the function.

9) Find the function that is finally graphed after the following transformations are applied to the graph of y = |x|. The graph is shifted right 3 units, stretched by a factor of 3, shifted vertically down 2 units, and finally reflected across the x-axis. 9) _____

A) $y = -3|x - 3| - 2$

B) $y = -(3|x + 3| - 2)$

C) $y = -(3|x - 3| - 2)$

D) $y = 3|-x - 3| - 2$

Solve the problem.

10) Linda needs to have her car towed. Little Town Auto charges a flat fee of $65 plus $2 per mile towed. Write a function expressing Linda's towing cost, c, in terms of miles towed, x. Find the cost of having a car towed 15 miles. 10) _____

A) c(x) = 2x + 65; $85

B) c(x) = 2x; $67

C) c(x) = 2x; $30

D) c(x) = 2x + 65; $95

SHORT ANSWER. Write the answer in the space provided. No work will be graded. No partial credit.

Solve the equation by factoring.

11) $x^2 + 4x - 45 = 0$ 11) _____

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

12) The graph of y = |x|, shifted 8 units to the right 12) _____

ESSAY. Show all work to justify your answer. Answer with no work or insufficient work will receive no credit. Partial credit may be given for correct work.

Solve the polynomial equation by factoring and then using the zero product principle.

13) $3x^3 + 4x^2 = 27x + 36$

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

14) $f(x) = 3x - 7$

Evaluate the function at the given value of the independent variable and simplify.

15) $f(x) = x^2 - 3$; $f(x + 4)$

Use the given conditions to write an equation for the line in the indicated form.

16) Passing through (5, 4) and parallel to the line whose equation is $y = -\frac{1}{6}x + 2$;

slope-intercept form

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

17) $h(x) = -(x + 4)^2 + 7$