Math 1314 - Practice Exam 2 - Spring 19

MULTIPLE CHOICE SECTION. (5 pts each) Choose the correct answer for each question. Select one choice only. No work will be graded. No partial credit.

Find the slope of the line that goes through the given points.

1) (3, 1) and $(\frac{4}{5}, 3)$ 1) _____

A) $\frac{11}{10}$ B) $-\frac{10}{11}$ C) $-\frac{11}{10}$ D) $-\frac{20}{11}$

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

2) $12x - 11y - 132 = 0$ 2) _____

A) $m = \frac{11}{12}$; (0, 11) B) $m = \frac{12}{11}$; (0, –12)

C) m = 12; (0, 132) D) $m = -\frac{12}{11}$; (0, 12)

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

3) Passing through (5, 2) and perpendicular to the line whose equation is $y = \frac{1}{3}x + 3$; 3) _____

slope–intercept form

A) $y = 3x - 17$ B) $y = -\frac{1}{3}x - \frac{17}{3}$ C) $y = -3x - 17$ D) $y = -3x + 17$

Answer the question.

4) How can the graph of $f(x) = 0.6(x + 7)^2 - 3$ be obtained from the graph of $y = x^2$? 4) _____

A) Shift it horizontally 7 units to the right. Shrink it vertically by a factor of 0.6. Shift it 3 units up.

B) Shift it horizontally 7 units to the left. Shrink it vertically by a factor of 0.6. Shift it 3 units down.

C) Shift it horizontally 3 units to the left. Stretch it vertically by a factor of 12. Shift it 7 units down.

D) Shift it horizontally 7 units to the left. Shrink it horizontally by a factor of 0.6. Shift it 3 units down.

The given point is on the graph of y = f(x). Find a point on the graph of y = g(x).

5) $g(x) = f(x - 1) + 3$; (4, 13) 5) _____

A) (14, 16) B) (5, 10) C) (14, 10) D) (5, 16)

Write an equation for a function that has a graph with the given characteristics.

6) The shape of $y = x^3$ is shifted 5.3 units to the right and then vertically shrunk by a factor of 0.6. 6) _____

A) $f(x) = 0.6(x - 5.3)^3$ B) $f(x) = 0.6x^3 + 5.3$

C) $f(x) = 0.6(x + 5.3)^3$ D) $f(x) = 5.3(x - 0.6)^3$

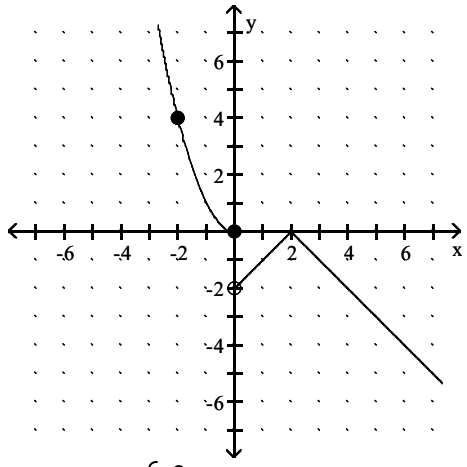
Evaluate the piecewise function at the given value of the independent variable.

7) $g(x) = \begin{cases} \dfrac{x^2 + 8}{x - 3} & \text{if } x \neq 3 \\ x + 6 & \text{if } x = 3 \end{cases}$; $g(7)$ 7) _____

A) 7 B) $\frac{15}{4}$ C) $\frac{57}{4}$ D) 13

Write an equation for the piecewise function.

8) 8) _____



A) $f(x) = \begin{cases} x^2, & \text{for } x \leq 0, \\ -|x + 2|, & \text{for } x > 0 \end{cases}$

B) $f(x) = \begin{cases} x^2, & \text{for } x \leq 0, \\ -|x - 2|, & \text{for } x > 0 \end{cases}$

C) $f(x) = \begin{cases} -|x - 2|, & \text{for } x < 0, \\ x^2, & \text{for } x \geq 0 \end{cases}$

D) $f(x) = \begin{cases} -x^2, & \text{for } x \leq 0, \\ |x - 2|, & \text{for } x > 0 \end{cases}$

Find the vertex of the parabola.

9) $h(x) = \frac{1}{2}x^2 - 4x - \frac{5}{2}$ 9) _____

A) $\left(2, -\frac{17}{2}\right)$ B) $\left(4, \frac{15}{2}\right)$ C) $\left(4, -\frac{21}{2}\right)$ D) $\left(-4, \frac{43}{2}\right)$

Find the range of the given function.

10) $f(x) = 3x^2 + 12x + 17$ 10) _____

A) $(-\infty, -5]$ B) $[5, \infty)$ C) $(-\infty, 2]$ D) $[-2, \infty)$

Use the Leading Coefficient Test to determine the end behavior of the polynomial function.

11) $f(x) = (x - 2)(x + 1)(x + 2)^3$ 11) _____

A) falls to the left and rises to the right
B) falls to the left and falls to the right
C) rises to the left and falls to the right
D) rises to the left and rises to the right

Find the zeros for the polynomial function and give the multiplicity for each zero. State whether the graph crosses the x–axis or touches the x–axis and turns around, at each zero.

12) $f(x) = \frac{1}{2}x^2(x^2 - 5)(x - 3)$ 12) _____

A) 0, multiplicity 2, crosses x–axis;
3, multiplicity 1, touches x–axis and turns around;
$\sqrt{5}$, multiplicity 1, touches x–axis and turns around;
$-\sqrt{5}$, multiplicity 1, touches x–axis and turns around

B) 0, multiplicity 2, touches x–axis and turns around;
3, multiplicity 1, crosses x–axis

C) 0, multiplicity 2, touches x–axis and turns around;
3, multiplicity 1, crosses x–axis
5, multiplicity 2, touches x–axis and turns around

D) 0, multiplicity 2, touches x–axis and turns around;
3, multiplicity 1, crosses x–axis;
$\sqrt{5}$, multiplicity 1, crosses x–axis;
$-\sqrt{5}$, multiplicity 1, crosses x–axis

SHORT ANSWER SECTION. (5 pts each) Write the answer in the box. Write the FINAL ANSWER ONLY. No work will be graded. No partial credit.

For the piecewise function, find the specified function value.

13) $f(x) = \begin{cases} 7x + 1, & \text{for } x < 6, \\ 6x, & \text{for } 6 \le x \le 10, \\ 6 - 3x, & \text{for } x > 10 \end{cases}$ 13) _____

f(−6)

Answer ONLY:

Determine whether there is a maximum or minimum value for the given function, and find that value.

14) $f(x) = \frac{1}{2}x^2 - 8x - \frac{11}{2}$ 14) _____

Answer ONLY:

Find the zeros for the polynomial function and give the multiplicity for each zero. State whether the graph crosses the x–axis or touches the x–axis and turns around, at each zero.

15) $f(x) = x^3 + x^2 - 42x$ 15) _____

Answer ONLY:

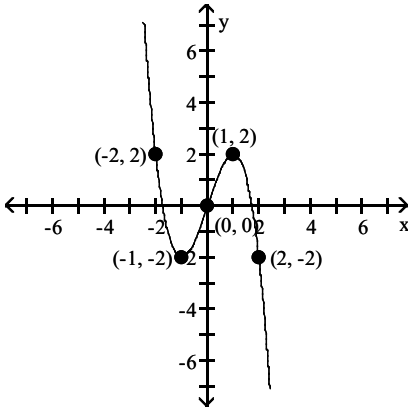
Use the given conditions to write an equation for the line in slope–intercept form.

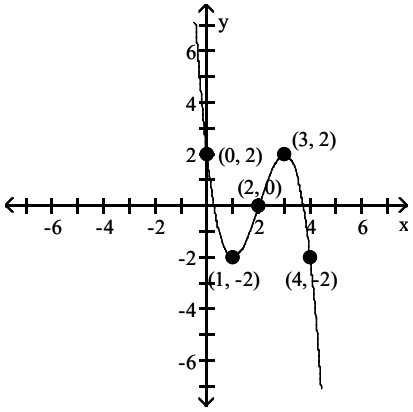
16) Passing through (–2, –5) and (–6, –6) 16) _____

Answer ONLY:

Given the graph of the function $f(x) = -x^3 + 3x$; find a formula for g(x) .

17) $f(x) = -x^3 + 3x$ $g(x) =$ 17) _____





Answer ONLY:

Solve the problem.

18) $A(x) = -0.015x^3 + 1.05x$ gives the alcohol level in an average person's bloodstream x hours after drinking 8 oz of 100–proof whiskey. If the level exceeds 1.5 units, a person is legally drunk. Would a person be drunk after 4 hours? 18) _____

Answer ONLY:

ESSAY. (5 pts each) Show all work to justify your answer. Answer with no work or insufficient work will receive no credit. Partial credit may be given.

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

19) Passing through (5, 2) and parallel to the line whose equation is $9x + y - 5 = 0$; slope–intercept form

Solution(Show all work)

Solve the problem.

20) The owner of a video store has determined that the cost C, in dollars, of operating the store is approximately given by $C(x) = 2x^2 - 32x + 730$, where x is the number of videos rented daily. Find the lowest cost to the nearest dollar.

Solution(Show all work)

Answer Key
Testname: 1314-PRACTICETEST2-SPR19-WITHKEY

1) B
2) B
3) D
4) B
5) D
6) A
7) C
8) B
9) C
10) B
11) A
12) D
13) –41
14) Minimum: $-\frac{75}{2}$
15) 0, multiplicity 1, crosses the x–axis
– 7, multiplicity 1, crosses the x–axis
6, multiplicity 1, crosses the x–axis
16) $y = \frac{1}{4}x - \frac{9}{2}$
17) $g(x) = -(x - 2)^3 + 3(x - 2)$
18) Yes
19) $y = -9x + 47$
20) $602