Math 1314 - Practice 2 - Spring 2020

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.

Answer the question.

1) How can the graph of $f(x) = \frac{1}{2}(x + 3)^2 - 10$ be obtained from the graph of $y = x^2$? 1) _____

A) Shift it horizontally 3 units to the left. Shrink it vertically by a factor of $\frac{1}{2}$. Shift it 10 units down.

B) Shift it horizontally 3 units to the right. Shrink it vertically by a factor of $\frac{1}{2}$. Shift it 10 units down.

C) Shift it horizontally 3 units to the right. Stretch it vertically by a factor of 2. Shift it 10 units up.

D) Shift it horizontally 3 units to the left. Shrink it vertically by a factor of 2. Shift it 10 units down.

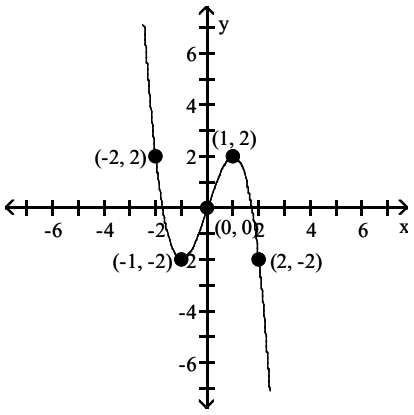
The given point is on the graph of y = f(x). Find a point on the graph of y = g(x).

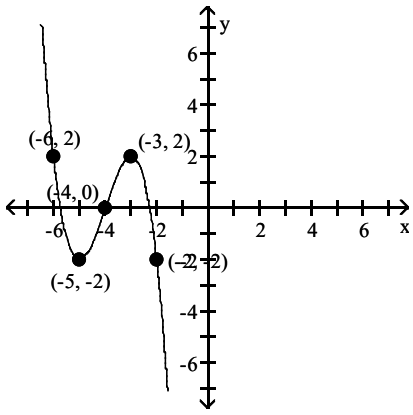
2) $g(x) = f(x - 1) + 3$; (6, 15) 2) _____

A) (7, 12) B) (7, 18) C) (16, 18) D) (16, 12)

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

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





A) $g(x) = -x^3 + 3x - 4$ B) $g(x) = -(x - 4)^3 + 3(x - 4)$

C) $g(x) = -(x + 4)^3 + 3(x + 4)$ D) $g(x) = -x^3 + 3x + 4$

Find the domain of the function.

4) $g(x) = \frac{2x}{x^2 - 36}$ 4) _____

A) (36, ∞) B) $(-\infty, -6) \cup (-6, 6) \cup (6, \infty)$

C) $(-\infty, 0) \cup (0, \infty)$ D) $(-\infty, \infty)$

Find the given value.

5) $h(x) = x + 4,\ g(x) = \sqrt{x + 2}$ 5) _____

Find $(h + g)(14)$.

A) 34 B) 22 C) 18 D) 26

Given functions f and g, perform the indicated operations.

6) $f(x) = 6 - 5x,\quad g(x) = -3x + 5$ 6) _____

Find $f + g$.

A) $3x$ B) $-2x + 11$ C) $-8x + 11$ D) $-3x + 6$

For the pair of functions, find the indicated domain.

7) $f(x) = 2x - 5,\ g(x) = \sqrt{x + 2}$ 7) _____

Find the domain of f/g.

A) $[2, \infty)$ B) $[0, \infty)$ C) $(-2, 2)$ D) $(-2, \infty)$

For the given functions f and g , find the indicated composition.

8) $f(x) = -4x + 2,\quad g(x) = 5x + 8$ 8) _____

$(g \circ f)(x)$

A) $-20x + 34$ B) $-20x - 2$ C) $-20x + 18$ D) $20x + 18$

Find the requested function value.

9) $f(x) = \frac{x - 5}{2},\ g(x) = 7x + 2$ 9) _____

Find $(g \circ f)(15)$.

A) 45 B) 535 C) 51 D) 37

Find a formula for the inverse.

10) $f(x) = \sqrt[3]{x - 27}$ 10) _____

A) Not one–to–one B) $f^{-1}(x) = \sqrt[3]{x + 27}$

C) $f^{-1}(x) = x^3 + 27$ D) $f^{-1}(x) = x^3 - 27$

11) $f(x) = 8x^3 - 7$ 11) _____

A) $f^{-1}(x) = \sqrt[3]{\frac{x + 7}{8}}$ B) Not one–to–one

C) $f^{-1}(x) = \sqrt[3]{\frac{x - 7}{8}}$ D) $f^{-1}(x) = \sqrt[3]{\frac{x}{8}} + 7$

Determine which two functions are inverses of each other.

12) $f(x) = \frac{x - 3}{2}\quad g(x) = 2x - 3\quad h(x) = \frac{x + 3}{2}$ 12) _____

A) None B) f(x) and h(x) C) g(x) and h(x) D) f(x) and g(x)

SHORT ANSWER SECTION. (5 pts each) WRITE THE ANSWER IN THE BOX. Write the FINAL ANSWER ONLY (do NOT write any work). No work will be graded. No partial credit.

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

13) The shape of $y = x^3$ is shifted 5.3 units to the right and then vertically shrunk by a factor of 0.6. 13) _____

WRITE FINAL ANSWER ONLY:

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

14) $g(x) = \frac{1}{8}f(x)$; (–8, 32) 14) _____

WRITE FINAL ANSWER ONLY:

Find the domain of the function.

15) $\frac{x}{\sqrt{x - 10}}$ 15) _____

WRITE FINAL ANSWER ONLY:

Find the requested function value.

16) $f(x) = -4x - 8$, $g(x) = 4x^2 - 8x + 8$ 16) _____

Find $(f \circ g)(-3)$.

WRITE THE FINAL ANSWER ONLY:

ESSAY. (10 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.

For the pair of functions, find the indicated composition.

17) $f(x) = 4x^2 + 3x + 5$, $g(x) = 3x - 3$

Find $(g \circ f)(x)$.

SHOW ALL WORK:

Find the inverse of the one–to–one function.

18) $f(x) = \frac{5x + 1}{6}$

SHOW ALL WORK:

Answer Key
Testname: 1314-PRACTICE2-SPR20-WITHKEY

1) A
2) B
3) C
4) B
5) B
6) C
7) D
8) C
9) D
10) C
11) A
12) C
13) $f(x) = 0.6(x - 5.3)^3$
14) $(-8, 4)$
15) $(10, \infty)$
16) -280
17) $12x^2 + 9x + 12$
18) $f^{-1}(x) = \frac{6x - 1}{5}$