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QUESTION 1

Select your answers from the drop-down menus below.

Find two functions f and g such that

$h(x) = |2x - 6| + 14$

can be written as

$(f \circ g)(x)$

.

$f(x) =$

$2x + 14$ and

$g(x) =$

$|x - 3|$

QUESTION 2

Select your answer from the drop-down below.

If

$f(x) = x^2 + 3x + 2$

and

$g(x) = x + 2$

, find

$(f \circ g)(x)$

.

$(f \circ g)(x) =$

$x^2 + 7x + 12$ ✓ . (Use lower case letters only)

QUESTION 3

Fill the correct answer in the provided blank.

If

$f(x) = 3x^2 + 2x$

and

$g(x) = \sqrt{x^2 + 1}$

, find

$2f + g$

.

$(2f + g)(x) =$

$6x^2 +$

$4x + \sqrt{x^2 + 1}$ ✓ . (Use lower case letters only)

QUESTION 4

Fill the correct answer in the provided blank. (Use lower case letters only)

If

$f(x) = x^2 + 9x$

and

$g(x) = 5x - 6$

, find

$(f - g)(x)$

.

$(f - g)(x)$

$=$

$x^2 + 9x -$ 5x ✓ $+ 6$

$=$

$x^2 + 4x + 6$ ✓

QUESTION 5

Fill the correct answer in the provided blank. (Use lower case letters only)

Let

$f(x) = x + 3$

and

$g(x) = x^2 + 2x$

. Find

$(f + g)(x)$

.

$(f + g)(x)$

$=$

$(x+3)+(x^2+2x)$

$=$

x^2+ $2x$ ✓ $+x+3$

$=$

x^2+3x+3 ✓

QUESTION 6

Select from the drop-down menus below.

Let
$f(x)=3x+2$
and
$g(x)=x^2+4x$
. Find
$(f\cdot g)(x)$
and state its domain.

- $(f\cdot g)(x)=$

  $3x^3+14x^2+8x$ ✓ (Use lower case letters only)

- Domain: $(-\infty, \infty)$

QUESTION 7

Select your answers from the drop-downs below.

If
$f(x) = 3x + 5$
and
$g(x) = \cos x$
, find
$(f \circ g)(x)$
and state its domain. (Use lower case letters only)

$(f \circ g)(x) =$

$3\cos(x) + 5$, and its domain = $(-\infty, \infty)$

QUESTION 8

Select from the drop-downs below.

If
$f(x) = \sqrt{x + 1}$
and
$g(x) = x^2 - 1$
, find

$\left(\frac{f}{g}\right)(x)$

and state its domain.

$\left(\frac{f}{g}\right)(x) =$

$\frac{\sqrt{x+1}}{x^2-1}$ ✓

Domain: $(-1,1)\cup(1,\infty)$ ✓

QUESTION 9

Choose the correct answer.

Consider the two functions

f

and

g

defined by

$f(x) = x^2 + 2$

and

$g(x) = x^2 + \sqrt{x(x+3)}$

. Let

$h(x) = \left(\frac{f+3}{f-g}\right)(x)$

. Find the domain of

h

.

The domain of
h
is:

- $[0,1)\cup(1,\infty)$
.

- $(-\infty,-4)\cup(-4,-3]\cup[0,1)\cup(1,\infty)$
. ✓

- $(-\infty,-4)\cup(1,\infty)$
.

- $(-\infty,-3]\cup[0,\infty)$
.

QUESTION 10

Select from the drop-down menus below.

If
$f(x)=\sqrt{2x-8}$
and
$g(x)=2x+1$
, find
$(f-2g)(x)$
and state its domain.

$(f-2g)(x) =$

$\sqrt{2x-8}-4x-2$ ✓

The domain of
$(f-2g)$
is $\{x|x \geq 4\}$ ✓.

QUESTION 11

Select your answer from the drop-down below.

If
$f(x) = x^2$
and
$g(x) = \sqrt{x},\ x \geq 0$
, find
$(f \circ g)(x)$
.

$(f \circ g)(x) =$

x ✓

QUESTION 12

Fill the correct answer in the blank provided. Give your answers from least to greatest.

Consider the two functions

f

and

g

defined by

$f(x) = x^2 + 2x$

and

$g(x) = 2x - 1$

.

Find the solutions to the equation

$(f \circ g)(x) = (g \circ f)(x)$

.

The solutions are:

$x =$

0 ✓ or

$x =$

2 ✓ .

QUESTION 13

Fill the correct answer in the blank provided.

Consider the three functions

h

,

f

, and

g

defined for any real number by

$h(x) = x^2 - 6x + 8$

,

$f(x) = x^2 - 2x$

, and

$g(x) = x + a$

where

a

is a real number.

Find the value of

a

so that

$h(x) = (f \circ g)(x)$

.

The value of

a

is:

$a =$

-2 ✓.

QUESTION 14

Select your answer from the drop-down below.

A phone store has a 10% discount sale on all phones. Abdul has a coupon for AED 100 off the price of a phone.

Let x be the original price of the phone, $d(x)$ be the price after the discount and let $c(x)$ be the price after using the coupon. Find

$(c \circ d)(x)$

.

$(c \circ d)(x) =$

$0.9x - 100$ ✓

QUESTION 15

Choose the correct answer.

Consider the two functions

f

and

g

defined by

$$f(x) = \frac{x+3}{2x-4}$$

and

$g(x) = |x-1| + 2$

.

Let

$h(x) = (f \circ g)(x)$

.

Find the domain of

h

.

The domain of

h

is:

- ◉ $(-\infty, 1) \cup (1, \infty)$. ✓
- ○ $(-\infty, 1) \cup (1, 2) \cup (2, \infty)$.

- $(-\infty, 1) \cup (2, \infty)$.
- $(-\infty, 2) \cup (2, \infty)$.