MATH 144 HW 01 (6224904)

Due: Fri Aug 29 2014 11:59 PM EDT

Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17

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1. Question Details SCalcET6 1.1.021. [1816174]

If $f(x) = 5x^2 - x + 4$, find the following.

$f(1) =$ [ ] 8

$f(-1) =$ [ ] 10

$f(a) =$ $5a^2 - a + 4$

$f(-a) =$ $5a^2 + a + 4$

$f(a + 1) =$ $5a^2 + 9a + 8$

$2f(a) =$ $10a^2 - 2a + 8$

$f(2a) =$ $20a^2 - 2a + 4$

$f(a^2) =$ $5a^4 - a^2 + 4$

$[f(a)]^2 =$ $25a^4 - 10a^3 + 41a^2 - 8a + 16$

$f(a + h) =$ $5a^2 + 10ah + 5h^2 - a - h + 4$

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2. Question Details SCalcET6 1.1.024.MI.SA. [1569703]

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

Consider the function below.

$f(x) = x^3$

Evaluate the difference quotient for the given function. Simplify your answer.

$$\frac{f(a + h) - f(a)}{h}$$

3. Question Details SCalcET6 1.1.023. [1289645]

Consider the function below.

$f(x) = 1 - 2x - x^2$

Evaluate the difference quotient for the given function. Simplify your answer.

$$\frac{f(4+h) - f(4)}{h}$$

$-10 - h$

4. Question Details SCalcET6 1.1.026. [1288740]

Consider the function below.

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

Evaluate the difference quotient for the given function. Simplify your answer.

$$\frac{f(x) - f(2)}{x-2}$$

$$-\frac{1}{2(x+2)}$$

5. Question Details SCalcET6 1.1.027. [667212]

Find the domain of the function. (Enter your intervals in ascending order. If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$f(x) = \frac{x}{5x-4}$$

? ▾ (-INFINITY , 4/5 ? ▾) U ? ▾ (4/5 , INFINITY ? ▾)

6. Question Details SCalcET6 1.1.028. [657053]

Find the domain of the function. (Enter your intervals in ascending order. If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$f(x) = \frac{2x+3}{x^2+8x+15}$$

? ▾ (-INFINITY , -5 ? ▾) U
? ▾ (-5 , -3 ? ▾) U
? ▾ (-3 , INFINITY ? ▾)

7. Question Details SCalcET6 1.1.030. [656997]

Find the domain of the function. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$g(u) = \sqrt{u} + \sqrt{7-u}$$

? ▾ [0 , 7 ? ▾]

8. Question Details SCalcET6 1.1.032. [667188]

Find the domain and range of the function. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$h(x) = \sqrt{4 - x^2}$$

? [ ] -2 , [ ] 2 ?] domain

? [ ] 0 , [ ] 2 ?] range

9. Question Details SCalcET6 1.1.036. [667193]

Find the domain of the function. (Enter your intervals in ascending order. If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$$H(t) = \frac{25 - t^2}{5 - t}$$

? (-INFINITY , 5 ?) U ? (5 , INFINITY ?)

10. Question Details SCalcET6 1.1.037.MI. [1386403]

Find the domain of the function. (If you need to use -∞ or ∞, enter -INFINITY or INFINITY.)

$g(x) = \sqrt{x - 3}$

? [ ] 3 , [ ] INFINITY ?)

11. Question Details SCalcET6 1.3.002. [1817518]

Explain how the following graphs are obtained from the graph of $y = f(x)$. (Select all that apply.)

(a) $y = 3f(x)$

- ☐ Shift 3 units upward.
- ☐ Shift 3 units downward.
- ☐ Shift 3 units to the right.
- ☐ Shift 3 units to the left.
- ☐ Stretch the graph vertically by a factor of 3.
- ☐ Shrink the graph vertically by a factor of 3.
- ☐ Stretch the graph horizontally by a factor of 3.
- ☐ Shrink the graph horizontally by a factor of 3.
- ☐ Reflect about the x-axis.
- ☐ Reflect about the origin.

(b) $y = f(x - 5)$

- ☐ Shift 5 units upward.
- ☐ Shift 5 units downward.
- ☐ Shift 5 units to the right.
- ☐ Shift 5 units to the left.
- ☐ Stretch the graph vertically by a factor of 5.
- ☐ Shrink the graph vertically by a factor of 5.
- ☐ Stretch the graph horizontally by a factor of 5.
- ☐ Shrink the graph horizontally by a factor of 5.
- ☐ Reflect about the x-axis.
- ☐ Reflect about the origin.

(c) $y = -f(x)$

- ☐ Shift 1 unit upward.
- ☐ Shift 1 unit downward.
- ☐ Shift 1 unit to the right.
- ☐ Shift 1 unit to the left.
- ☐ Stretch the graph vertically by a factor of 1.
- ☐ Shrink the graph vertically by a factor of 1.
- ☐ Stretch the graph horizontally by a factor of 1.
- ☐ Shrink the graph horizontally by a factor of 1.
- ☐ Reflect about the x-axis.
- ☐ Reflect about the origin.

(d) $y = -7f(x)$

- ☐ Shift 7 units upward.
- ☐ Shift 7 units downward.
- ☐ Shift 7 units to the right.
- ☐ Shift 7 units to the left.
- ☐ Stretch the graph vertically by a factor of 7.
- ☐ Shrink the graph vertically by a factor of 7.
- ☐ Stretch the graph horizontally by a factor of 7.
- ☐ Shrink the graph horizontally by a factor of 7.
- ☐ Reflect about the x-axis.
- ☐ Reflect about the origin.

(e) $y = f(9x)$

- [ ] Shift 9 units upward.
- [ ] Shift 9 units downward.
- [ ] Shift 9 units to the right.
- [ ] Shift 9 units to the left.
- [ ] Stretch the graph vertically by a factor of 9.
- [ ] Shrink the graph vertically by a factor of 9.
- [ ] Stretch the graph horizontally by a factor of 9.
- [ ] Shrink the graph horizontally by a factor of 9.
- [ ] Reflect about the x-axis.
- [ ] Reflect about the origin.

(f) $y = 8f(x) - 6$

- [ ] Shift 8 units upward.
- [ ] Shift 6 units upward.
- [ ] Shift 8 units downward.
- [ ] Shift 6 units downward.
- [ ] Shift 8 units to the right.
- [ ] Shift 6 units to the right.
- [ ] Shift 8 units to the left.
- [ ] Shift 6 units to the left.
- [ ] Stretch the graph vertically by a factor of 8.
- [ ] Stretch the graph vertically by a factor of 6.
- [ ] Shrink the graph vertically by a factor of 8.
- [ ] Shrink the graph vertically by a factor of 6.
- [ ] Stretch the graph horizontally by a factor of 8.
- [ ] Stretch the graph horizontally by a factor of 6.
- [ ] Shrink the graph horizontally by a factor of 8.
- [ ] Shrink the graph horizontally by a factor of 6.
- [ ] Reflect about the x-axis.
- [ ] Reflect about the origin.

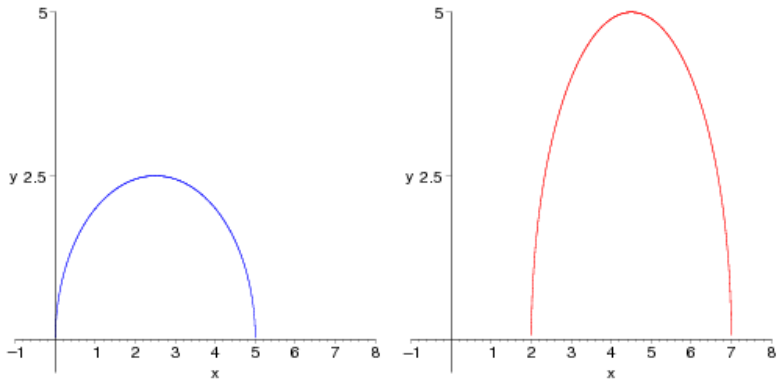
12. Question Details SCalcET6 1.3.006.MI.SA. [1569695]

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

The graph of the function is given in blue. Use transformations to create the function whose graph is shown in red.

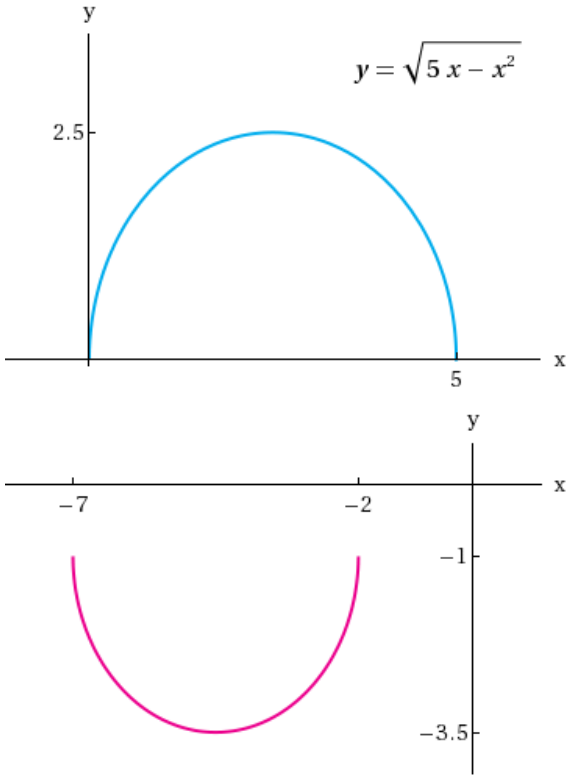
$y = \sqrt{5x - x^2}$



13. Question Details SCalcET6 1.3.007. [1817112]

The graph of the function $y = \sqrt{5x - x^2}$ is given. Use transformations to create a function whose graph is as shown.

$y =$ $-\sqrt{5(x+7) - (x+7)^2} - 1$



14. Question Details SCalcET6 1.3.031. [1288206]

Find each of the following functions and their domains.

$f(x) = x^2 - 5$
$g(x) = 5x - 5$

(a) $f \circ g =$ $(5x-5)^2 - 5$

- (-∞, ∞)
- $x > 5$
- $x \neq 5$
- (-∞, 5]

(b) $g \circ f =$ $5\left(x^2-5\right) - 5$

- $x > 5$
- (-∞, 5]
- (-∞, ∞)
- $x \neq 5$

(c) $f \circ f =$ $\left(x^2-5\right)^2 - 5$

- (-∞, 5]
- $x \neq 5$
- (-∞, ∞)
- $x > 5$

(d) $g \circ g =$ $5\left(5x-5\right) - 5$

- $x \neq 5$
- (-∞, ∞)
- (-∞, 5]
- $x > 5$

15. Question Details SCalcET6 1.3.032. [1289838]

Find each of the following functions and their domains.

$f(x) = x - 1$

$g(x) = x^2 + 5x + 1$

(a) $f \circ g =$ $x^2 + 5x + 1 - 1$

- $x \neq 1$
- $(-\infty, 1]$
- $x > 5$
- $(-\infty, \infty)$

(b) $g \circ f =$ $(x-1)^2 + 5(x-1) + 1$

- $(-\infty, \infty)$
- $x \neq 1$
- $x > 5$
- $(-\infty, 1]$

(c) $f \circ f =$ $x - 2$

- $x \neq 1$
- $x > 5$
- $(-\infty, 1]$
- $(-\infty, \infty)$

(d) $g \circ g =$ $(x^2 + 5x + 1)^2 + 5(x^2 + 5x + 1) + 1$

- $x \neq 1$
- $x > 5$
- $(-\infty, 1]$
- $(-\infty, \infty)$

16. Question Details SCalcET6 1.3.035. [1288485]

Find each of the following functions and their domains.

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

$$g(x) = \frac{x+20}{x+2}$$

(a) $f \circ g =$ $\dfrac{x+2}{x+20} + \dfrac{x+20}{x+2}$

- $x \neq 0$
- $x \neq 0$ & $x \neq -1$
- $x \neq -2$ & $x \neq -8$
- $x \neq -20$ & $x \neq -2$

(b) $g \circ f =$ $\dfrac{x + \frac{1}{x} + 20}{x + \frac{1}{x} + 2}$

- $x \neq -20$ & $x \neq -2$
- $x \neq 0$ & $x \neq -1$
- $x \neq -2$ & $x \neq -8$
- $x \neq 0$

(c) $f \circ f =$ $x + \dfrac{1}{x} + \dfrac{1}{x + \frac{1}{x}}$

- $x \neq -20$ & $x \neq -2$
- $x \neq 0$ & $x \neq -1$
- $x \neq 0$
- $x \neq -2$ & $x \neq -8$

(d) $g \circ g =$ $\dfrac{\frac{x+20}{x+2} + 20}{\frac{x+20}{x+2} + 2}$

- $x \neq -20$ & $x \neq -2$
- $x \neq 0$
- $x \neq 0$ & $x \neq -1$
- $x \neq -2$ & $x \neq -8$

17. Question Details SCalcET6 1.3.039.MI.SA. [1569859]

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

Find $f \circ g \circ h$.

$f(x) = \sqrt{x - 4}$

$g(x) = x^2$

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

Assignment Details

Name (AID): **MATH 144 HW 01 (6224904)**
Submissions Allowed: **100**
Category: **Homework**
Code:
Locked: **Yes**
Author: **Blanco-Silva, Francisco (** blanco@math.sc.edu **)**
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