Samantha Krieg **B**

WeBWorK assignment due : 02/01/2020 at 11:59pm EST.

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1. (1 point) For the equation $-x^3+10y^6=-5$ answer the following questions.

Is the equation symmetric with respect to the y-axis? (*yes* or *no*)_____

Is the equation symmetric with respect to the x-axis? (*yes* or *no*)_____

Is the equation symmetric with respect to the origin? (*yes* or *no*)_____

Answer(s) submitted:

- no
- yes
- no

(correct)

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2. (1 point) This problem gives you some practice identifying how more complicated functions can be built from simpler functions.

Let $f(x)=x^3+1$and let $g(x)=x+1$. Match the functions defined below with the letters labeling their equivalent expressions.

___1. $g(x^2)$
___2. $g(f(x))$
___3. $(g(x))^2$
___4. $(f(x))^2$

A. $1+2x+x^2$
B. $2+x^3$
C. $1+x^2$
D. $1+2x^3+x^6$

Answer(s) submitted:

- C
- B
- A
- D

(correct)

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3. (1 point)

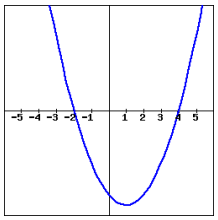
Match each equation with its graph.

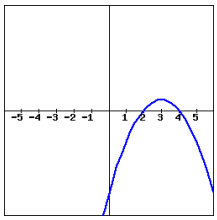
? $y=2(x-4)(x+2)$

? $y=2(x+2)(x+4)$

? $y=-2(x+4)(x-2)$

? $y=2(x-2)(x+4)$


A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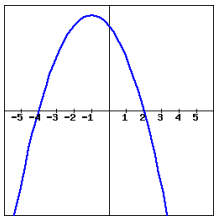
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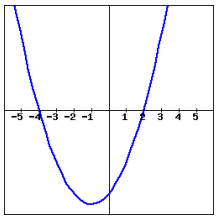
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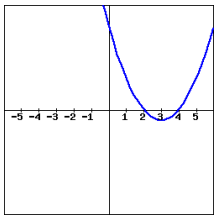
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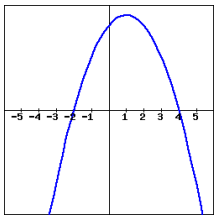
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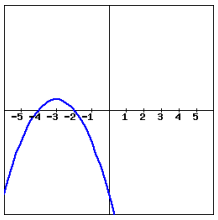
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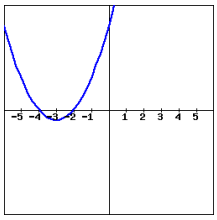
H

(Click on a graph to enlarge it)

Answer(s) submitted:

- A
- H
- C
- D

(correct)

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4. (1 point) Suppose that

$$f(x)=\sqrt{x^2-5^2} \quad \text{and} \quad g(x)=\sqrt{5-x}.$$

For each function h given below, find a formula for $h(x)$ and the domain of h. Use **interval notation** for entering each domain.

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

$h(x)=$ _____
Domain = _____

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

$h(x)=$ _____
Domain = _____

(C) $h(x) = (f \circ f)(x)$.

$h(x)$ = _____
Domain = _____

(D) $h(x) = (g \circ g)(x)$.

$h(x)$ = _____
Domain = _____

Answer(s) submitted:

- `sqrt(abs(5-x)-25)`
- `(-INF, -20]`
- `sqrt(5-sqrt(x^2-5^2))`
- `[-7.071, -5]U[5, 7.071]`
- `sqrt(abs(x^2-5^2)-25)`
- `(-INF, -7.071]U[7.071, INF)`
- `sqrt(5-sqrt(5-x))`
- `[-20,5]`

(correct)

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5. (1 point) Find the inverse of $y = f(t) = \sqrt{(4t)} + 2$

$f^{-1}(y)$ = _____

Answer(s) submitted:

- `((y-2)^2)/4`

(correct)

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6. (1 point) Question 47:

Let $r(x) = \dfrac{2x-3}{9x+2}$. Find and simplify

$r^{-1}(x)$ = _____

Answer(s) submitted:

- `(-2x-3)/(9x-2)`

(correct)

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7. (1 point) Let $f(x) = 9x^3 - 14$. Find $f^{-1}(x)$.
$f^{-1}(x)$ = _____
Answer(s) submitted:

- `((x+14)/9)^(1/3)`

(correct)

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8. (1 point) Question 46:

Decompose the function below into $u(v(x))$. In each part, based on the function $v(x)$ given, find the corresponding $u(x)$ needed to decompose the function.

$$y = \frac{1+x^5}{8+x^5}$$

a) $v(x) = x^5$, $u(x)$ = _____

b) $v(x) = x^5 + 1$, $u(x)$ = _____

Answer(s) submitted:

- `(1+x)/(8+x)`
- `x/(7+x)`

(correct)

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9. (1 point) Question 52:

Let $f(x) = \sqrt{3-2x}$.

Which of the following decompositions of $f(x) = p(q(x))$ into a pair of functions $p(x)$ (the outside function) and $q(x)$ (the inside function) is/are correct ? Select all that apply if more than one is appropriate.

- A. $p(x) = \sqrt{-2x}$ and $q(x) = 3+x$
- B. $p(x) = \sqrt{-x}$ and $q(x) = 2x-3$
- C. $p(x) = \sqrt{3+x}$ and $q(x) = 2x$
- D. $p(x) = 3-2x$ and $q(x) = \sqrt{x}$
- E. $p(x) = \sqrt{x}$ and $q(x) = 3-2x$
- F. $p(x) = \sqrt{3-x}$ and $q(x) = 2x$
- G. All of the above
- H. None of the above

Answer(s) submitted:

- `( B, E, F )`

(correct)

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10. (1 point) Suppose that

$$f(x) = \sqrt{8x-2} \quad \text{and} \quad g(x) = 4x^2 - 6.$$

For each function h given below, find a formula for $h(x)$ and the domain of h. Enter the domains using **interval notation**.

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

$h(x)$ = _____
Domain = _____

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

$h(x)$ = _____

Domain = _____

(C) $h(x) = (f \circ f)(x)$.

$h(x)$ = _____
Domain = _____

(D) $h(x) = (g \circ g)(x)$.

$h(x)$ = _____
Domain = _____

Answer(s) submitted:

- `sqrt(32x^2-50)`
- `(-INF, -1.25] U [1.25, INF)`
- `32x-14`
- `[0.25, INF)`
- `sqrt(8 sqrt(8x-2)-2)`
- `[0.2578125, INF)`
- `64x^4-192x^2+138`
- `(-INF, INF)`

(correct)