

Directions: Work all problems on both sides of this quiz. Do all of your work on this paper or on scratch paper provided for you. When you are sure of it, write the letter corresponding to the correct answer in the answer space. Work carefully but quickly.

1. State the domain of the function $g(x) = \frac{x}{x^2 - 16}$.

(a) $(-\infty, 4) \cup (4, \infty)$ (b) $(-\infty, 0) \cup (0, \infty)$

1. _____

(c) $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$ (d) $(-\infty, \infty)$

(e) None of the above

2. Find the inverse function of $h(x) = 3 - x^5$.

(a) $h^{-1}(x) = \frac{1}{3 - x^5}$ (b) $h^{-1}(x) = \sqrt[5]{3 - x}$

2. _____

(c) $h^{-1}(x) = 3 - \sqrt[5]{x}$ (d) $h^{-1}(x) = \sqrt[5]{3 + x}$

(e) None of the above

3. Find all real solutions to the equation $e^{2x} + 3e^x - 10 = 0$.

(a) $x = \ln(2)$ (b) $x = 1.5$

3. _____

(c) $x = -5$ or $x = 2$ (d) $x = \ln(5)$

(e) None of the above

4. Evaluate $u(t - 6)$ for $u(t) = t^2 + \frac{1}{t + 5}$.

(a) $t^2 - 12t + 36 + \frac{1}{t - 1}$ (b) $t^2 + 36 + \frac{1}{t - 1}$

4. _____

(c) $t^2 - 12t + 35 + \frac{1}{t}$ (d) $t^2 + 30 + \frac{1}{t + 5}$

(e) None of the above

5. List the transformations necessary to change $f(x) = |x|$ into $g(x) = -|x| + 2$.

(a) Reflect in y-axis, then shift up 2 units.

5. _____

(b) Reflect in x-axis, then shift up 2 units.

(c) Shift up 2 units, then reflect in x-axis.

(d) Shift down 2 units, then reflect in y-axis.

(e) None of the above

6. Given $f(x) = \frac{2}{x}$ and $g(t) = t^3 + 1$, find $(f \circ g)(-1)$.

- (a) -2 (b) 2
(c) -4 (d) 0
(e) None of the above

6. _____

7. Find all real solutions to the equation $\ln(t^2 - 3) = 0$.

- (a) $t = \pm\sqrt{3}$ (b) $t = \sqrt{3}$
(c) $t = 2$ (d) $t = \pm 2$
(e) None of the above

7. _____

8. Find $f(2x)$ for $f(x) = x^4 - x^2$.

- (a) $16x^4 - 2x^2$ (b) $2x^4 - 4x^2$
(c) $16x^4 - 4x^2$ (d) $2x^4 - 2x^2$
(e) None of the above

8. _____

9. Given $v(x) = 3x - 1$ and $m(x) = x^2 + x$, find and simplify $(m \circ v)(x)$.

- (a) $3x^3 + 2x^2 - x$ (b) $9x^2 - 3x$
(c) $9x^2 + x + 1$ (d) $3x^2 + 3x - 1$
(e) None of the above

9. _____

10. Find the rule of the function g whose graph can obtained from that of $f(x) = \sqrt{x}$ by stretching away from the x-axis by a factor of 2 and then reflecting in the y-axis.

- (a) $g(x) = 2\sqrt{-x}$ (b) $g(x) = -2\sqrt{x}$
(c) $g(x) = \sqrt{-2x}$ (d) $g(x) = -\sqrt{2x}$
(e) None of the above

10. _____