

Student: \_\_\_\_\_  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Instructor: Garth Isaak  
Course: precalc blitzer (1)  
Book: Blitzer: Precalculus Essentials, 3e

Assignment: Functions and graphs practice  
diagnostic 2a

1. Evaluate the function at the given value of the independent variable and simplify.

$$f(x) = \frac{x^3 - 3}{x^2 - 3}; f(-2)$$

- A.  $-\frac{11}{4}$   
 B.  $-8$   
 C.  $1$   
 D.  $-11$

2. Find and simplify the difference quotient  $\frac{f(x+h) - f(x)}{h}$ ,  $h \neq 0$  for the given function.

$$f(x) = 3x + 4$$

- A.  $3 + \frac{6(x+4)}{h}$   
 B.  $3$   
 C.  $3 + \frac{8}{h}$   
 D.  $0$

3. When making a telephone call using a calling card, a call lasting 6 minutes costs \$2.25. A call lasting 13 minutes costs \$4.35. Let  $y$  be the cost of making a call lasting  $x$  minutes using a calling card. Write a linear equation that models the cost of making a call lasting  $x$  minutes.

- A.  $y = \frac{10}{3}x + -\frac{71}{4}$   
 B.  $y = -0.3x + 4.05$   
 C.  $y = 0.3x + 0.45$   
 D.  $y = 0.3x - 8.65$

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4. Find the domain of the function.

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

- A.  $(-\infty, 0) \cup (0, \infty)$   
 B.  $(4, \infty)$   
 C.  $(-\infty, \infty)$   
 D.  $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$

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

$$f(x) = -3x + 3, g(x) = 4x + 9; (g \circ f)(x)$$

- A.  $-12x + 30$   
 B.  $12x + 21$   
 C.  $-12x - 3$   
 D.  $-12x + 21$

6. Find functions  $f$  and  $g$  so that  $h(x) = (f \circ g)(x)$ .

$$h(x) = \frac{7}{x^2} + 7$$

- A.  $f(x) = x + 7, g(x) = 7/x^2$   
 B.  $f(x) = x, g(x) = 7/x + 7$   
 C.  $f(x) = 7/x^2, g(x) = 7$   
 D.  $f(x) = 1/x, g(x) = 7/x + 7$

7. Determine which two functions are inverses of each other.

$$f(x) = \sqrt{x}, g(x) = \frac{1}{\sqrt{x}}, h(x) = x^2$$

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

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1. D

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2. B

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3. C

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4. D

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5. D

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6. A

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7. D

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