Midterm Exam

Cumulative Review: Functions through Trigonometry Foundations

Name: _____ Date: _____ Score: _____ / 16

INSTRUCTIONS

This midterm exam cumulatively covers Units 1 through 5 (Foundations of Functions through Trigonometry Foundations). For multiple-choice questions, circle the letter of the correct answer. For short-answer and problem-solving questions, show your complete work in the space provided. No calculator unless your teacher says otherwise.

1 **Unit 1 — If $f(x) = 2x^2 - 3x + 1$, find $f(-1)$.** Multiple Choice

A 6
B 0
C −4
D 4

2 **Unit 1 — Find the domain of $f(x) = \sqrt{(x - 5)}$.** Multiple Choice

A $x \geq 5$
B $x > 5$
C $x \leq 5$
D All real numbers

3 **Unit 1 — Short Answer: If $f(x) = x - 4$ and $g(x) = 3x$, find $(f \circ g)(2)$.** Short Answer

4 **Unit 2 — Find the slope of the line through (1, 2) and (4, 11).** Multiple Choice

A 3
B 9
C 1/3
D 4

5 **Unit 2 — Find the equation of the line with slope −1 through (2, 5).** Multiple Choice

A $y = -x + 7$
B $y = -x + 3$
C $y = x + 3$
D $y = -x - 7$

6 **Unit 2 — Short Answer: A service charges a $20 fixed fee plus $5 per item. Find the total cost for 8 items.** Short Answer

7 **Unit 3 — Find all real zeros of $f(x) = x^2 - 5x + 6$.** Multiple Choice

A 2, 3
B −2, −3
C 1, 6
D 2, −3

8 **Unit 3 — Find the vertical asymptote of $f(x) = 1/(x - 4)$.** Multiple Choice

A x = 4
B x = 0
C x = −4
D No vertical asymptote

9 **Unit 3 — Short Answer: Find the domain of $f(x) = (x + 1)/(x^2 - 1)$.** Short Answer

10 **Unit 4 — Solve for x: $2^x = 16$** Multiple Choice

A 4
B 8
C 3
D 16

11 **Unit 4 — Solve: $\log_3(x) = 2$** Multiple Choice

A 9
B 6
C 8
D 5

12 **Unit 4 — Short Answer: Simplify log(1000).** Short Answer

13 **Unit 5 — Find the exact value: sin(45°)** Multiple Choice

A √2/2
B 1/2
C √3/2
D 1

14 **Unit 5 — Find the reference angle for 300°.** Multiple Choice

A 60°
B 30°
C 120°
D 300°

15 **Unit 5 — Short Answer: Find the exact value of cos(120°) using a reference angle.** Short Answer

16 **Unit 5 — Problem Solving: In a right triangle, the side opposite angle θ is 5 and the hypotenuse is 13. Find sin(θ) and cos(θ). Show your work.** Problem Solving