

# SANTA BARBARA CITY COLLEGE

## TEST #4 – SAMPLE QUESTIONS

This test will assess your pre-calculus skills for placement into **PRE-CALCULUS II** (Math 138), and **CALCULUS** (Math 150). Eligibility for Math 138 will be based on scores achieved in competency areas 5, 6, and 8 on the 90-minute, 60-item Pre-Calculus Test. Eligibility for Math 150 will be based on scores achieved in all competency areas on the 90-minute, 60-item Pre-Calculus Test.

More extensive study packets are available at the Campus Bookstore.

**PLEASE NOTE: CALCULATORS ARE NOT ALLOWED AT ASSESSMENT TESTING. IT IS BEST TO STUDY WITHOUT THE AID OF A CALCULATOR.**

1. Elementary operations with numerical and algebraic fractions

$$\frac{3x-2}{x+2} - \frac{2}{x-2} =$$

- (A)  $\frac{3}{x+2}$       (B)  $\frac{3x-4}{x^2-4}$       (C)  $\frac{3x}{x^2-4}$       (D)  $\frac{x(3x-10)}{x^2-4}$       (E)  $\frac{3x(x-4)}{x^2-4x+4}$

2. Operations with exponents and radicals

$$\frac{x^{3a+2}}{x^{2a-1}} = \quad (A) x^{a+3} \quad (B) x^{a-3} \quad (C) x^{5a-1} \quad (D) x^3$$

3. Linear equations and inequalities

For what value of  $t$  does  $\frac{2t-1}{3t+4} = 2$ ?

- (A)  $-6$       (B)  $-\frac{9}{4}$       (C)  $\frac{3}{2}$       (D)  $\frac{9}{4}$       (E) There is no value of  $t$  satisfying this equation.

4. Polynomials and polynomial equations

If  $(x-1)(x^2-4) + 2(x-1)(x+2) = (x-1)P$ , then  $P =$

- (A)  $x^2-2$       (B)  $x^2$       (C)  $x(x+2)$       (D)  $x^2+2$       (E)  $(x+2)^2$

5. Functions

If  $f(x) = 2x+5$  and  $g(x) = 1-x^2$ , then  $f(g(2)) =$

- (A)  $-3$       (B)  $-1$       (C)  $1$       (D)  $2$       (E)  $9$

6. Trigonometry

If  $\sin \theta = \frac{3}{5}$  and  $0 \leq \theta \leq \frac{\pi}{2}$ , then  $\tan \theta =$

- (A)  $\frac{3}{2}$       (B)  $\frac{4}{3}$       (C)  $\frac{5}{4}$       (D)  $\frac{4}{5}$       (E)  $\frac{3}{4}$

7. Logarithmic and exponential functions

$\log_3 27 =$       (A)  $81$       (B)  $9$       (C)  $3$       (D)  $\frac{1}{3}$       (E)  $\frac{1}{9}$

8. Mathematical modeling – word problems

If  $\frac{2}{3}$  is  $\frac{1}{2}$  of  $\frac{4}{5}$  of a certain number, then that number is

- (A)  $\frac{15}{4}$       (B)  $\frac{5}{3}$       (C)  $\frac{5}{6}$       (D)  $\frac{5}{12}$       (E)  $\frac{4}{15}$

ANSWERS: (1) D (2) A (3) B (4) C (5) B (6) E (7) C (8) B