



Regents Practice Test 3

Algebra 2 Trigonometry

Part II: *Show work on separate paper.*

28. Solve for all values of x : $\frac{2}{x+1} = x$
29. Two circles whose equations are $(x - 3)^2 + (y - 5)^2 = 25$ and $(x - 7)^2 + (y - 5)^2 = 9$ intersect in two points. What is the equation of the line passing through these two points?
30. Evaluate: $\sum_{n=1}^3 \left(\sin \frac{n\pi}{2} \right)$
31. Solve: $x^2 - x - 12 > 0$. State the answer in interval notation.
32. A car's stopping distance varies *directly* with the speed it travels, and *inversely* with the friction value of the road surface. If a car takes 60 feet to stop at 32 mph, on a road whose friction value is 4, what would be the stopping distance of a car traveling at 60 mph on a road with a friction value of 2?
33. Find the zeros of the polynomial function: $P(x) = (x^2 + 9)(x + 3)$
34. Solve for x : $\ln(2x - 3) + \ln(x - 2) = 2 \ln x$
35. If $0 \leq \theta \leq 2\pi$, solve the equation $4 \tan \theta + 2 = 2 \tan \theta$.

Part III

36. The accompanying table shows the number of bacterial present in a certain culture over a 5-hour period, where x is the time, in hours, and y is the number of bacteria.

Write an exponential regression equation for this data, rounding all values to *four decimal places*.

Using this equation, determine the number of whole bacteria present when x equals 6.5 hours.

x	y
0	1,000
1	1,049
2	1,100
3	1,157
4	1,212
5	1,271

37. During a training exercise in the Mojave Desert, two military vehicles left the base camp at the same time, one traveling at an average speed of 25 miles per hour and the other at an average speed of 50 miles per hour. Each vehicle traveled along a level, straight route. If the exercise requires the two vehicles to be 65 miles apart after traveling 1 hour, what must the angle between the two routes be, to the *nearest degree*?
38. The sum of twice a positive integer and four times the reciprocal of the integer is 9. Find the integer.

Part IV

39. Perform the indicated operations and simplify completely: $\frac{x^2 - 9}{x^2 - 5x} \cdot \frac{5x - x^2}{x^2 - x - 12} \div \frac{x - 4}{x^2 - 8x + 16}$