

Your signature _____

Show your steps. and work on another piece of paper. Unless otherwise indicated: Each question is scored: 2 points for the correct answer; 3 points for the correct work. Partial credit may be awarded.

Do work
next to graph

- 1) Write a rational function that approximates attached. Make sure to show your explanation:
- 2) Write a transformed Log function for the graph on the following page.
- 3) Write a formula for the transformed exponential function graphed on the following page.
- 4) Write a formula to represent the sinusoidal on the following page
- 5)

For the function you found in # 2, write the equation of the inverse of $f(x)$.

Analytically solve the equation on the interval $0^\circ \leq x < 360^\circ$. Use a grapher to check. Screen capture your graph. Express the solution(s) rounded to one decimal place.

6) $2 + 13 \sin x = 14 \cos^2 x$

Solve the problem.

- 7) Island A is 150 miles from island B. A ship captain travels 250 miles from island A and then finds that he is off course and 160 miles from island B. What angle, in degrees, must he turn through to head straight for island B? Round the answer to two decimal places. (Hint: Be careful to properly identify which angle is the turning angle.)
- 8) Two forces of magnitude 25 pounds and 40 pounds act on an object. The force of 40 lb acts along the positive x-axis, and the force of 25 lb acts at an angle of 80° with the positive x-axis. Find the direction and magnitude of the resultant force. Round the direction and magnitude to the nearest whole number.

Find the average rate of change on the interval $[-5, 5]$

9) $f(x) = \frac{3}{x}$

Find the domain of the function below.

10) $g(x) = \frac{\sqrt{x-3}}{x+3}$



