

SHOW ALL OF YOUR WORK ON THE QUIZ PAPER. FULL CREDIT IS NOT GIVEN UNLESS THE ANSWER FOLLOWS FROM THE WORK SHOWN.

1. (8 points) The point $P(4,5)$ lies on the curve $f(x) = \sqrt{x^2 + 9}$.

(a) If Q is the point $(x, \sqrt{x^2 + 9})$, use your calculator to find the slope of the secant line PQ (correct to five decimal places) for the values of x given below.

(i) 4.1	(ii) 4.01
(iii) 3.9	(iv) 3.99

(b) Using the results of part (a), guess the value of the slope of the tangent line (correct to one decimal place) to the curve at the point $P(4,5)$.

(c) Using the slope from part (b), find an equation of the tangent line to the curve at $P(4,5)$.

2. (5 points) Find the value of $\lim_{x \rightarrow 0} \frac{4^x - 1}{x}$ numerically, by using your calculator to create a table of values. Show the table of values to support your answer and write your answer correct to two decimal places in the place provided.

Answer: _____



3. (7 points) The function $f(x)$ is graphed below. Use the graph to find the indicated quantities. If a limit does not exist, state this.

(a) $\lim_{x \rightarrow 0^-} f(x)$

(b) $\lim_{x \rightarrow 0^+} f(x)$

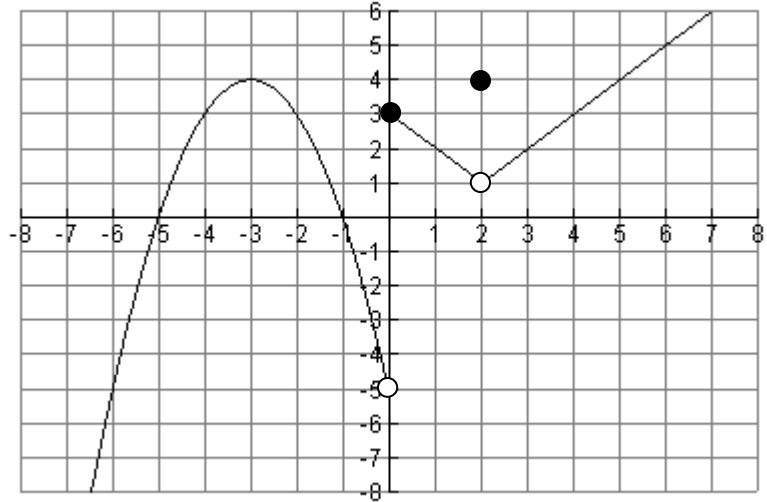
(c) $\lim_{x \rightarrow 0} f(x)$

(d) $\lim_{x \rightarrow 2^-} f(x)$

(e) $\lim_{x \rightarrow 2^+} f(x)$

(f) $\lim_{x \rightarrow 2} f(x)$

(g) $f(2)$



4. (5 points) Evaluate the limit below *symbolically, without using your calculator*. Your answer should be a whole number or a fraction, not a decimal number.

$$\lim_{x \rightarrow 3} \frac{2x - 6}{x^2 + x - 12}$$