

Quiz 2.3 CALCULATOR PERMITTED

**3-DECIMAL ACCURACY, rounded or truncated**

15 minutes, 13 checks, 5 points each

If  $f(x) = x^4 - 5x^2 - x - 2$ ,

graph  $f$  in the calculator, then answer the following questions.

1. Find the domain of  $f(x)$ . Use correct notation.
2. Find the Local Extreme values using your calculator.  
For example say “Local Max of  $y = \underline{\hspace{2cm}}$  at  $x = \underline{\hspace{2cm}}$ ”
3. Find the **open**  $x$ -intervals over which  $f$  is (a) decreasing and (b) increasing.
4. Find the average rate of change of  $f(x)$  on  $[0,2]$ . **Show the difference quotient**. Simplify your answer.
5. Bonus (+5): What’s the range of  $f(x)$ ? Use correct notation.
6. If  $f(x) = \frac{x^2 - 5x - 24}{2x^2 - 11x - 40}$ 
  - a. Find  $\lim_{x \rightarrow \infty} f(x)$  and  $\lim_{x \rightarrow -\infty} f(x)$
  - b. Find the equation of any HA’s
  - c. Factor the numerator and denominator completely.
  - d. Find the domain of  $f$ .
  - e. Find the equation of any VA’s.
  - f. Find the coordinate  $(x, y)$ , of any Removable Point Discontinuity.