NAME: MATH1210-002

Quiz 8: §3.2, 3.3 & 3.5

July 12, 2016

Instructions: Please show all of your work as partial credit will be given where appropriate, *and* there may be no credit given for problems where there is no work shown. All answers should be boxed and completely simplified, unless otherwise stated. No electronics are allowed.

1. For $f(x) = x^{5/3} - 5x$, answer the following questions.

   (a) **[2 points]** Find the asymptotes.

   Vertical asymptote:_____ Horizontal or Slant asymptote:_____

   (b) **[4 points]** Fill in the sign line for $f'(x) = 5x^{2/3} - 5$

   $\longleftrightarrow$

   (c) **[2 points]** Find all local max/min point(s), if they exist. If none exist, indicate that clearly.

   Max point(s):_____ Min point(s):_____

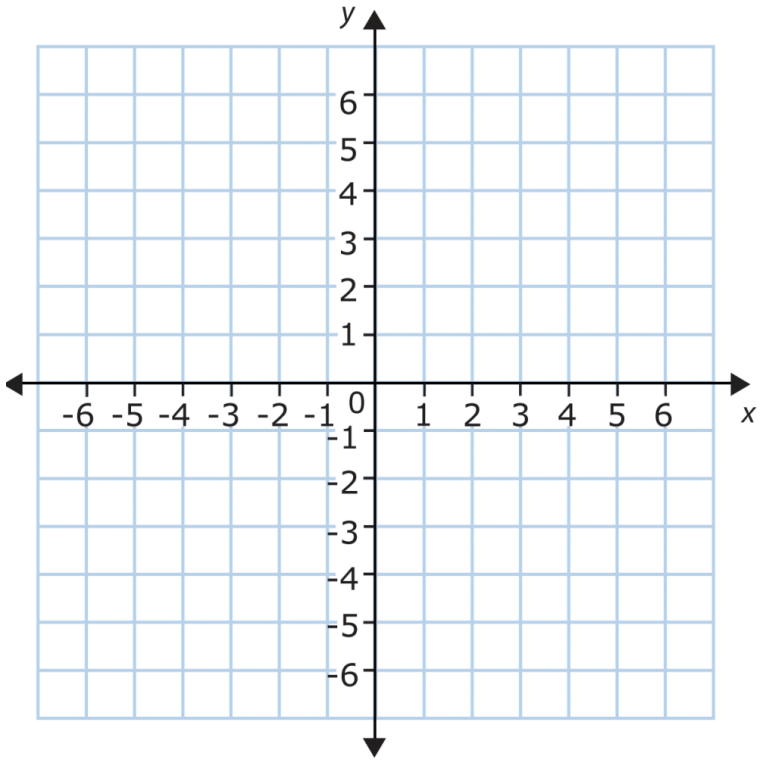
   (d) **[4 points]** Fill in the sign line for $f''(x) = \frac{10}{3}x^{-1/3} = \frac{10}{3\sqrt[3]{x}}$

   $\longleftrightarrow$

   (e) **[2 points]** Find all inflection point(s), if they exist. If none exist, indicate that clearly.

   Inflection points:_____

   (f) **[6 points]** Sketch the graph of f using all of the information above.



2. For $f(x) = \frac{3x}{x^2+3}$, answer the following questions.

(a) **[2 points]** Find the asymptotes.

Vertical asymptote:_____ Horizontal or Slant asymptote:_____

(b) **[4 points]** Fill in the sign line for $f'(x) = \frac{-3(x^2-3)}{(x^2+3)^2}$

$\longleftrightarrow$

(c) **[2 points]** Find all local max/min point(s), if they exist. If none exist, indicate that clearly.

Max point(s):_____ Min point(s):_____

(d) **[4 points]** Fill in the sign line for $f''(x) = \frac{6x(x^2-9)}{(x^2+3)^3}$

$\longleftrightarrow$

(e) **[2 points]** Find all inflection point(s), if they exist. If none exist, indicate that clearly.

Inflection points:_____

(f) **[6 points]** Sketch the graph of f using all of the information above.