MATH 2253 PRACTICE TEST 3 FALL 2016

1. 

(a) Find all intercepts

(b) Locate all critical values

(c) Find the open intervals on which *f* is increasing or decreasing

(d) Identify all relative extrema.

(e) Find the open intervals on which the graph of *f* is concave up or concave down.

(f) Identify the point of inflection.

(g) Sketch the graph of *f*(*x*)

2. Find all asymptotes of . Do not attempt to graph the function.

3. 

(a) Find all intercepts

(b) Locate all critical values

(c) Find the open intervals on which *f* is increasing or decreasing

(d) Identify all relative extrema.

(e) Find the open intervals on which the graph of *f* is concave up or concave down.

(f) Identify any points of inflection.

(g) Find all asymptotes

(h) Sketch the graph of *f*(*x*)

4. 

(a) Find all intercepts

(b) Locate all critical values

(c) Find the open intervals on which *f* is increasing or decreasing

(d) Identify all relative extrema.

(e) Find the open intervals on which the graph of *f* is concave up or concave down.

(f) Identify any points of inflection.

(g) Find all asymptotes

(h) Sketch the graph of *f*(*x*)

5. Find  by implicit differentiation: 

6. A ladder 5 meters long is resting against a vertical wall on horizontal ground. Following an ice storm the bottom of the ladder begins slipping away from the wall at 0.5 meters per second. Find how quickly the top of the ladder is slipping down the wall when to bottom of the ladder is 3 meters from the wall.

7. Find the extrema of  and use the second derivative test to classify them as maxima or minima.

8 A rectangular box with a volume of 320 ft3 is to be constructed with a square base and top. The cost per ft2 for the bottom is 15ȼ for the top is 10 ȼ and for the sides is 2.5 ȼ. What dimensions will minimize the cost?

9. Evaluate and  if ; ; 

10. Use differentials to approximate 