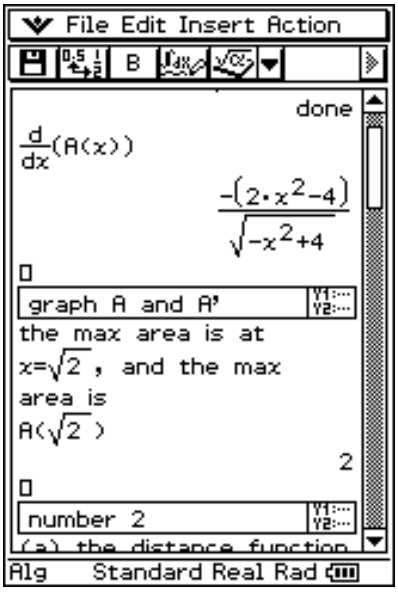
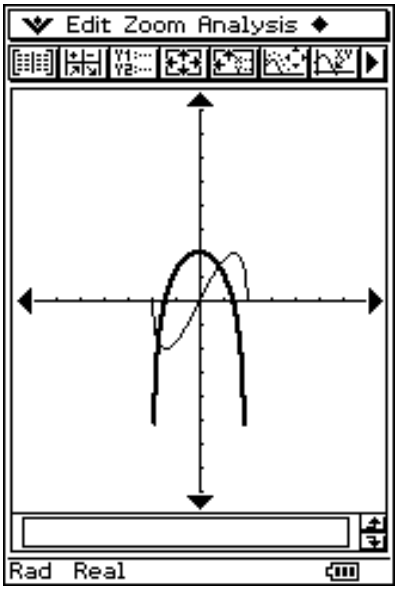
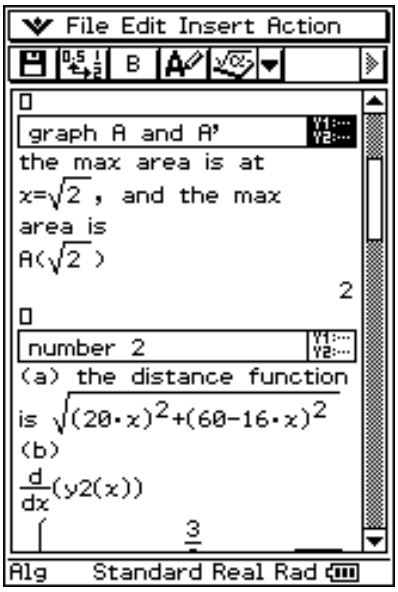
Quiz 1 Math 152 Print Name: Time

1. Find the largest area of a rectangle in the first quadrant under the curve $y = \sqrt{4 - x^2}$.





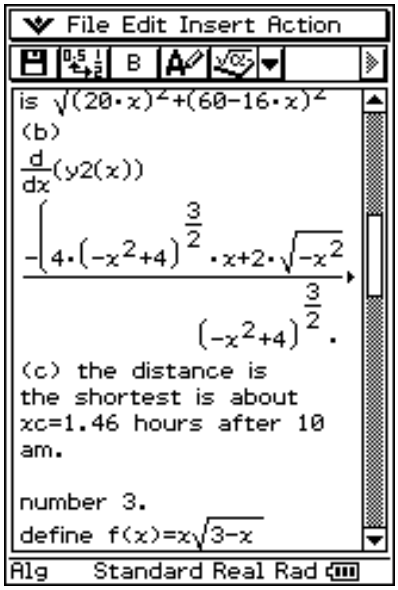
The thin is original, and the thick is derivative.



2. At 10 am, the ship *A* is 60 miles north of the ship *B*. We know that the ship *A* is going eastward at 20 miles per hour and the ship *B* is going north at 16 miles per hour.

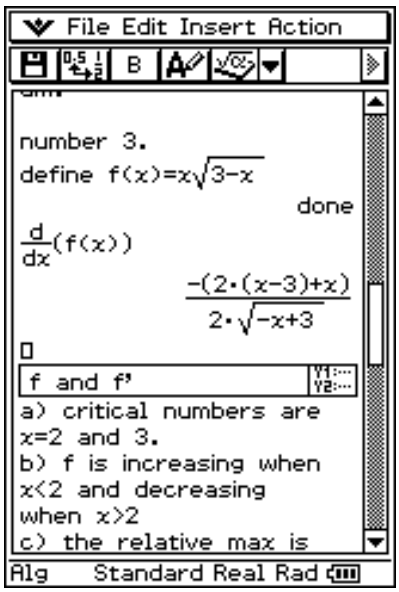
- **a.** Set up the distance function between the ship *A* and the ship *B*.
- **b.** Set up the rate of change of the distance (between *A* and *B*) with respect to time.
- **c.** When is the distance between the ship *A* and the ship *B* closest?

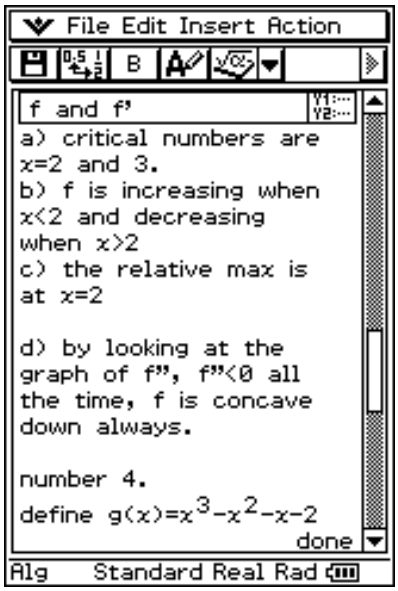
** See the screen above for setting up the distance function.



3. If $f(x) = x\sqrt{3-x}$, then

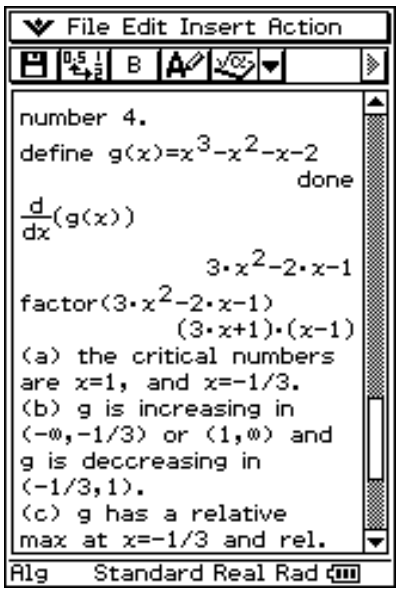
- **a.** find the critical numbers of *f*,
- **b.** find the interval(s) where *f* is increasing or decreasing,
- **c.** find the relative maximum or relative minimum of *f*,

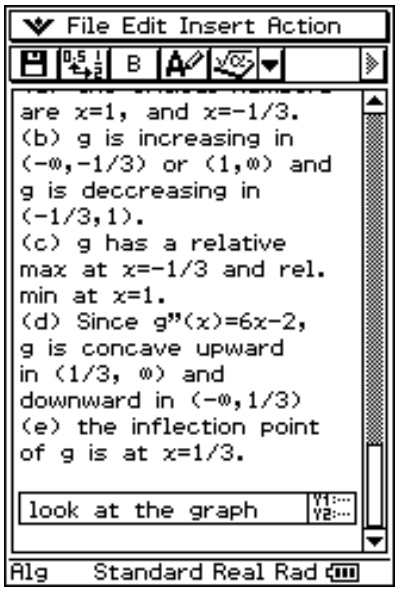


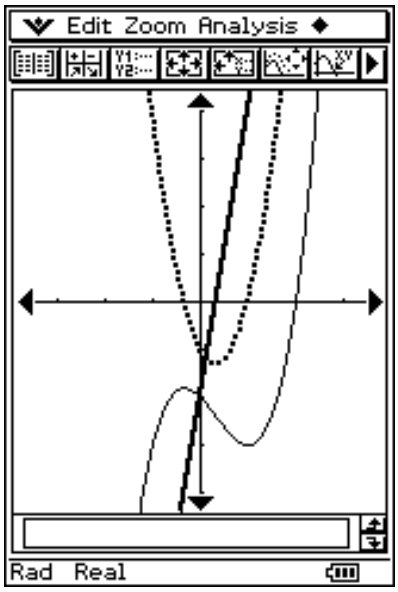


4. If $f(x) = x^3 - x^2 - x + 2$,

- **a.** find the critical numbers of *f*,
- **b.** find the interval(s) where *f* is increasing or decreasing,
- **c.** find the relative maximum or relative minimum of *f*,
- **d.** find the interval(s) where *f* is concave upward or concave downward,
- **e.** find the inflection point(s) of *f*.


File Edit Insert Action
number 4.
define g(x)=x^3-x^2-x-2
done
d/dx(g(x))
3·x^2-2·x-1
factor(3·x^2-2·x-1)
(3·x+1)·(x-1)
(a) the critical numbers
are x=1, and x=-1/3.
(b) g is increasing in
(-∞,-1/3) or (1,∞) and
g is deccreasing in
(-1/3,1).
(c) g has a relative
max at x=-1/3 and rel.
Alg Standard Real Rad


File Edit Insert Action
are x=1, and x=-1/3.
(b) g is increasing in
(-∞,-1/3) or (1,∞) and
g is deccreasing in
(-1/3,1).
(c) g has a relative
max at x=-1/3 and rel.
min at x=1.
(d) Since g"(x)=6x-2,
g is concave upward
in (1/3, ∞) and
downward in (-∞,1/3)
(e) the inflection point
of g is at x=1/3.
look at the graph
Alg Standard Real Rad


Edit Zoom Analysis
Rad Real