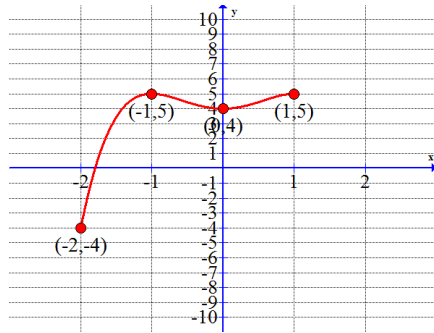


Chapter 4 Practice Test (Complete all problems)

1) Find the absolute maximum and absolute minimum



#2-3: Find the absolute maximum and absolute minimum of the function under the given interval.

2) $f(x) = 2x^3 - 54x$; $[0, 4]$

3) $f(x) = xe^x$; $[-2, 2]$

4) A campground owner has 100 meters of fencing. He wants to enclose a rectangular field bordering a river, with no fencing needed along the river, and let W represent the width of the field and L represent the length of the field. Make W be the side of the fence that is perpendicular to the river so that two widths and one length will need to be constructed.

- Write an equation for the length of the field
- Write an equation for the area of the field.
- Find the domain of the area equation that was created in part b.
(This domain will be of the form: $\# \leq W \leq \#$)
- Find the value of w leading to the maximum area
- Find the value of L leading to the maximum area
- Find the maximum area.

#5-6: Use implicit differentiation to determine $\frac{dy}{dx}$.

5) $y^2 - 3y = 5x^3$

6) $xy = 6x + 8$

7) Find the equation of the line tangent to the graph at the indicated point.

$y^2 = 3y + 2x^2 - 2$; $(1, 3)$

8) A pebble is dropped into a calm pond causing ripples in the form of concentric circles. The radius r of the outer ripple is increasing at a constant rate of 3 feet per second. When the radius is 6 feet, at what rate is the total area of the disturbed water changing?

9) Air is being pumped into a spherical balloon at $3 \text{ cm}^3/\text{second}$. Calculate the rate at which the radius of the balloon is changing when the radius of the balloon is 10 cm.