ACE Calc I

Chapter 2B
Implicit Differentiation & Rates of Change

Assignment Sheet

***This is a tentative schedule only. Actual assignments may differ from what is shown.*

Day	Section	Page	Assignment
1	Implicit Differentiation	145	Odds ##5,11,15,23,27,29,39,47,53,57,73
2	Rates of Change	116 126 138	Odds #93,105,107 Odds #83,85 Odds #109,111
3	Velocity & Acceleration	116 128 138	Odds #95,97,99 Odds #115,116 Odds #105,106
4	Rates Practice	116 127	Evens #98 Odds #89
5	Related Rates	153	Odds #11,13,15,17,21,25,27
6	Review		
7	Test		

Board Problems

Day	A	B	C	D
1	$2x^3+3y^2=6$ Find y'	$y=\sin(2x+y)$ Find $\frac{dy}{dx}$	$x^3+3xy-7y=25$ Find y'	$y^3=4x$ Find $\frac{d^2y}{dx^2}$

2	The area of a rectangle is given by $A=3t(\sqrt{t+1})$. Find the avg. rate of change of the area on [1,3]. Find the instantaneous rate of change of the area at t=2.	The germ population in a sample at time t seconds is given by $P(t)=500\left(1+\frac{4t}{50+t^2}\right)$ Find $P'(2)$ and interpret the value in the context of the situation.	The manufacturing cost, C, for a product is a function of the number of units, n, manufactured. $C(10)=C(15)$ $C'(10)=\$5/unit$ $C'(15)=-\$2/unit$ What conclusions can be drawn about production costs at 10 units versus 15 units?

3	The distance, in meters, a particle travels over time is given by $s(t)=\frac{6t}{t^2+1}$. Find the avg. velocity of the particle from 0 to 2 seconds. Find the velocity of the particle at 1 second.	The velocity of an object is given by $v(t)=6\sqrt{t}-3t$ cm/sec. Find the avg. acceleration of the object from 1 to 3 seconds. Find the acceleration of the object at 3 seconds.	A coin is dropped from the top of a 1,776 foot tower. Find the velocity of the coin at 1 second. Find the velocity of the coin when it hits the ground.

4	NONE

5	The volume of a sphere is given as $v=\frac{4}{3}\pi r^3$. If the radius of the sphere is increasing at a rate of 0.5cm/sec, find the rate of change of the volume when the radius is 10cm.	A 13 foot ladder leans against a wall. The base of the ladder begins to slide away from the wall at 0.25 ft/sec. How fast is the top of the ladder sliding down the wall when the bottom of the ladder is 5 feet from the wall?	How fast is the angle between the ground and the ladder changing when the bottom of the ladder is 5 feet from the wall?	A conical tank is being filled with water at rate of 10 cubic feet per minute. The height of the tank is 12 feet and the diameter of its base is 10 feet. Find the rate of change of the height of the water in the tank, when the water's depth is 8 feet.