Calculus 3 – Aug 26, 2003

Take out a 8 1/2 by 11 piece of paper
Write your name and today's date on it
Rules:
Show **ALL** work for credit; be neat. Calculators can be used for graphing and calculating only. Give exact answers when possible.

Problem

Find the equation of the tangent line to $f(x) = \sqrt{x}$ at $x = 9$.

Solution

The best formula is $(y - b) = m(x - a)$

Find a**:** $x = 9$ **is given so** $a = 9$

Find b**:** $f(9) = \sqrt{9} = 3$

Find m**:** $f'(x) = \frac{1}{2\sqrt{x}}$

Find m**:** $f'(9) = 1/6$

Answer: $(y - 3) = (1/6)(x - 9)$

$6y - 18 = x - 9$

$x - 6y + 9 = 0$