MATH 151
Mrs. Bonny Tighe

QUIZ 8
25 points
4,10

NAME Answers

Section _____ 4/14/06

1. Find f given the following. a) $f'(x) = \sin x + \cos x - \sec^2 x, \quad f(0) = 2$

$f(x) = -\cos x + \sin x - \tan x + C$

$2 = -\cos 0 + \sin 0 - \tan 0 + C$

$2 = -1 + C$

$3 = C$

$f(x) = -\cos x + \sin x - \tan x + 3$

b) $f''(x) = \dfrac{6x^3 - 2x}{x}, \quad f'(1) = 3 \text{ and } f(0) = 1$

$f''(x) = 6x^2 - 2$, $f'(x) = \frac{6}{3}x^3 - 2x + C$

$f'(x) = 3x^3 - 2x + 2$ $f(x) = \frac{3}{4}x^4 - x^2 + 2x + C$, $C = 1$

$3 = 3(1)^3 - 2(1) + C$

$2 = C$

$f(x) = \frac{3}{4}x^4 - x^2 + 2x + 1$

c) $f''(x) = 4\sqrt{x} + \dfrac{1}{x^4}$, ~~$f(1) = 0$ and $f(4) = 1$~~ general form

$f''(x) = 4x^{1/2} + x^{-4}$ $f'(x) = \frac{4}{3/2}x^{3/2} + \frac{1}{-3}x^{-3} + C$,

$f(x) = \frac{8/3\, x^{7/2}}{7/2} + \frac{\frac{-1}{3}}{-2}x^{-2} + Cx + D$

$f(x) = \frac{16}{15}x^{7/2} + \frac{1}{6x^2} + Cx + D$

2. A particle is moving with acceleration of $a(t) = \sin t + \cos t$ Find the equation for the position function of the particle if $v(0) = 1$ *and* $s(0) = 2$.

$v(t) = -\cos t + \sin t + C$ $1 = -1 + 0 + C$ $C = 2$

$s(t) = -\sin t - \cos t + 2t + C$ $2 = -1 + 2 + C$ $C = 3$

$s(t) = -\sin t - \cos t + 2t + 3$