3450:221 Calculus, Kreider

Name: _____

Quiz 17, section 4.9

1. (3 pts) Find the function $f(x)$ if $f'(x) = 2\cos x + 3\sin x$ and $f(0) = 4$

$f(x) = 2\sin x - 3\cos x + C$

$4 = f(0) = 2\sin 0 - 3\cos 0 + C$

$4 = 0 - 3 + C \qquad C = 7$

$f(x) = 2\sin x - 3\cos x + 7$

2. (4 pts) Find the function $f(x)$ if $f'(x) = \frac{2}{1+x^2} + \frac{5}{7}x^{5/7}$ and $f(0) = 2$

$f(x) = 2\tan^{-1} x + \frac{5}{7}\left(\frac{x^{12/7}}{12/7}\right) + C$

$= 2\tan^{-1} x + \frac{5}{12}x^{12/7} + C$

$2 = f(0) = 2\tan^{-1} 0 + \frac{5}{12}\cdot 0 + C$

0

$C = 2$

$f(x) = 2\tan^{-1} x + \frac{5}{12}x^{12/7} + 2$

3. (3 pts) Find the function $f(x)$ if $f'(x) = e^x + 2 + \frac{3}{x}$ and $f(1) = 6$

$f(x) = e^x + 2x + 3\ln x + C$

$6 = f(1) = e^1 + 2 + 0 + C \qquad C = 4 - e$

$f(x) = e^x + 2x + 3\ln x + 4 - e$