MAT4-120 Calculus of a Single Variable II
Quiz 1 November 24, 2015

solution

name

1. (4 pts.) Find the derivative of the following functions:

a. $e^{\tan(x^2)}$

45 p195 $e^{\tan x^2} \cdot \sec^2 x^2 \cdot 2x$

out: e^x
mid: $\tan x$
in: x^2

53 p195 b. $\sin^2(x\cos x)$

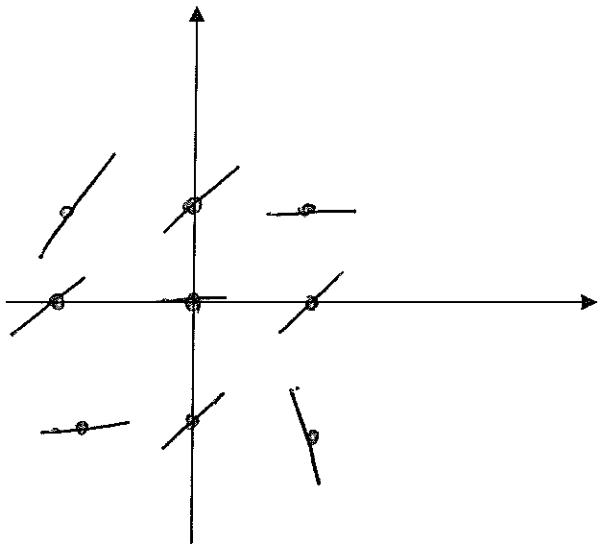
$2\sin(x\cos x)\cdot\cos(x\cos x)(\cos x - x\sin x)$

out: x^2
mid: $\sin x$
in: $x\cos x$ (product).

65 p196 2. (3 pts.) Find an anti-derivative of the following function: $\frac{\cos x}{2+\sin x}$ ← $\frac{f'}{f}$

$\ln(2+\sin x) + C$

3. (5 pts.) a. Produce the slope field for the differential equation y' = y – t. Choose the integer values of y and t of -1,0, and 1.



b. In one sentence, explain why we look at the slope field of a differential equation.

If you follow the slope field, you trace out the solution functions of the ODE.