MATH 46 WORKSHEET

Index 2 index eq

as 5-10?

 $tan \epsilon = O(\epsilon)$ 

es 2-0?

[Hout use graph first, prove lated

B)

Is  $f(t, \epsilon) := \epsilon tant$ [Hint: graph it us t].

uniformly convergent to zerr on (0, 1/4) as E-10?

does f(t, x) conveye pointwise to year on (0, 7/2)? dup/FontName get Sfontname eq

I index/DistillerFauxFont known not and

C) Rearrange the terms to form a correct asymptotic sequence as E-10:

yo -- yo are some fames of t. You may just use symbols 0,1,...6:

 $\dot{\epsilon}^{\prime}\dot{y}_{o}(t)$  +  $\frac{1}{\epsilon}\dot{y}_{i}(t)$  +  $\ln\epsilon\dot{y}_{i}(t)$  +  $\dot{y}_{i}(t)$  +  $\dot{\epsilon}^{\prime}\ln\epsilon\dot{y}_{i}(t)$ + = 2ys(t) + = 2 ln = y6(t) +. god dod dod dod

Banett MATH 46 WORKSHEET: Asymptotic analysis 4/10/09 ~ SOLNS~ tan z = o(z) as  $z \rightarrow 0$ ? ie is  $\frac{f(z)}{g(z)} = \frac{\tan z}{z} \frac{\lim_{z \to 0}}{\lim_{z \to 0} \frac{\sec^2 z}{1 + \cosh z}} = \frac{1}{1 + 1}$ so, no , not little o' is  $tane = O(\epsilon)$  as  $\epsilon \to 0$ ? [Hmt use graph first, powelated Yes, by above, since limit of votic is 1, one may choose not M(>1) st.  $\forall \epsilon \in [0,c]$ ,  $\frac{\tan \epsilon}{\epsilon} < M$ . Is  $f(t, \epsilon) := \epsilon tant$ uniformly convergent to zerr on (0, 1/4) as 2-10? [Hour: graphit us t]. yes dosmarksub false def for fixed e: on (0, 1/2)? no

since can't

squeeze f

in internal (0, 1/2) 7/4 T/2 does f(t,s) converge pointwise to zero on  $(0, \frac{\pi}{2})$ ? yes. a son snotylnoensblwai xebni s eeles gogi for fixed te(0, %), tant is a number so (in fle ) = 0. C) Rearrange the terms to form a correct asymptotic sequence as \$10:  $y(t) = \xi \dot{y}_0(t) + \frac{1}{\varepsilon} y_1(t) + \ln \varepsilon y_2(t) + y_3(t) + \varepsilon \ln \varepsilon y_4(t)$ yo ... yo are some fines of t. + =2 ys(t) + =2 ln2 y 6(t) +. You may just use symbols 0,1,...6: 1 In 8 1 21/2 22/n°8 22/n°8 22/n°8 22 'smallert as 840'