

ONE STATE VARIABLE EQN

$$x' = -(x^{(2/3)}) + 3*f = f$$

t	xi	delt	Fi=2cos3ti	f(xi,ti)=xi^(2/3)+3*Fi	k1	ti+1=ti+delt	Fi+1	xi+k1	f(xi+1,ti+1) k2
0	0.25	0.1		2	5.603149737	0.560314974	0.1	1.910672978	0.810314974 4.862853 0.486285
0.1	0.773	0.1	1.910672978		4.889527691	0.488952769	0.2	1.65067123	1.262252918 3.74046 0.378405
0.2	1.207	0.1	1.65067123		3.818396473	0.381839647	0.3	1.243219937	1.588818468 2.35806 0.236806
0.3	1.516	0.1	1.243219937		2.409812364	0.240981236	0.4	0.724715509	1.757282875 0.717924 0.071792
0.4	1.673	0.1	0.724715509		0.765041474	0.076504147	0.5	0.141474403	1.749192598 -1.02733 -0.10273

$$x' = -(x^{(1/3)}) + 2*(F)^{1/2} = f$$

t	xi	delt	Fi=2cos3ti	f(xi,ti)=	xi+1=xi+0.1*f	Fi+1=2cos3ti+1	f(xi+1,ti+1)	xi+1=xi+delt*(f(xi,ti)+f(xi+1,ti+1))/2	Mod Euler
0	0.25	0.1		2	7.370039475	0.1	0.987003948	1.910672978	6.30569338 0.933786643
0.1	0.934	0.1	1.910672978		6.323919464	0.2	1.566178589	1.65067123	4.288123883 1.46438881
0.2	1.464	0.1	1.65067123		4.313848232	0.3	1.895773633	1.243219937	1.853548328 1.772758638
0.3	1.773	0.1	1.243219937		1.880919015	0.4	1.96085054	0.724715509	-0.20122081 1.856743548 not needed

$$x' = -1*(x^{(1/2)}) + (F)^{1/2} = f$$

t	xi	delt	Fi=2sin3ti	f(xi,ti)=	ti+1	ti/2=ti+delt/2	midpoint	xi/2=xi+k1/2	xim=xi+0.5*0.1*f	Fim=sin3t f(xim,tim)
0	0.75	0.1		0	-0.866025404	0.1	-0.08660254	0.05	0.70669873	0.70669873 0.288876 -0.75133
0.1	0.675	0.1	0.591040413		-0.47217432	0.2	-0.047217432	0.15	0.651258611	0.651258611 0.869931 -0.05023
0.2	0.67	0.1	1.129284947		0.456844061	0.3	0.045684406	0.25	0.692686941	0.692686941 1.363278 1.026247
0.3	0.772	0.1	1.566653819		1.57550176	0.4	0.157550176	0.35	0.851244569	0.851244569 1.734846 2.087063

$$x' = -(x^{(1/5)}) + 2*(F)^{1/2} = f$$

t	xi	delt	Fi=2cot3ti	f(xi,ti)=	ti+1	xi+1=xi+0.1*f	Fi+1=2cot3ti+1	f(xi+1,ti+1)	xi+1=xi+delt*(f(xi,ti)+f(xi+1,ti+1))/2	Mod Euler
0.1	0.25	0.1	6.465456288	-0.628549158	0.2	0.187145084	2.923391894	-0.48134212	0.194505436	-0.07513
0.2	0.195	0.1	2.923391894	-0.486881466	0.3	0.14581729	1.587102296	-0.39471767	0.150425479	-0.00502
0.3	0.15	0.1	1.587102296	-0.398964758	0.4	0.110529004	0.777559139	-0.39489848	0.110732318	0.102625
0.4	0.111	0.1	0.777559139	-0.395135124	0.5	0.071218805	0.141829689	-0.51863284	0.065043919 not needed	0.2087063