

Extra Credit Competing Species/ Predator Prey Model

Paul Henning, 5/12/09, TA: Cynthia Bossard, MATH246 section 0222

Shift from 9.4 #6 to 9.5 #4..... 1

Shift from 9.4 #6 to 9.5 #4

I used a variable, p , to change one function into the other. When $p = 0$ the portrait is entirely of the first function. When $p = 1$ the portrait is entirely of the second function. You can see how the portrait shifts as one function changes to the other.

```
warning off all
for p = 0:0.1:1
f = @(t, x) [x(1)*(1 - x(1) + 0.5*x(2))*(1 - p) + x(1)*(1.125 - x(1) - ...
0.5*x(2))*p]; x(2)*(2.5 - 1.5*x(2) + 0.25*x(1))*(1-p) + x(2)*(-1 + ...
x(1))*p];
figure; hold on
for a = [0:8]
for b = [0:0.5:5]
[t, xa] = ode45(f, [0 5], [a b]);
plot(xa(:,1), xa(:,2))
[t, xa] = ode45(f, [0 -5], [a b]);
plot(xa(:,1), xa(:,2))
end
end
axis([0 8 0 5])
end
hold off
```















