BLACK & VEATCH
BLACK & VEATCH Building a world of difference.

Name: Linearization	Example
Course No. & Name:	<i>"</i>

Issued Date:	20
Due Deter	00

UNC | School of Computing and Engineering | Problem No.:

Title: C2#68C

Submitted Date:_

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of

Linearize the following equation for $V \approx 13.89$ m/s $1908 \frac{dV}{dt} = F(t) - 171.4 - 0.36 V^2$

V=13.89+ Ve where |Ve/</13.89
F= 288.86+ Fe where |Fe| << 280.86

The value 280.86 comes from the operations point condition that $V=13.89 \, \text{m/s}$ and dV/dt=0

0 = F - 171.4 - 0.36.13.89 F = 280.86 Newton

1908 At (13.89+ Ve) = 280.86+Fe-171.4-0.36(13.89+Ve) 2 1908 At (Ve) = 288.86+Fe-174.4-14.46-10Ve-0.36 Ve

Meglect Since Ve is Very Small

1908 St (Ve) = Fe - 10 Ve

As a transfer function

 $\frac{\overline{Ve}}{Fe} = \frac{1}{19085 + 10}$