Formula Sheet:

$mx'' + cx' kx = f(t)$
$w0 = (k/m)^{(½)}$ $f = 2\pi / w0$ $T = 1/f = w0/2\pi$
Amplitude: $C = \sqrt{A^2+B^2}$ Time Lag= alpha/w0
Phase Angle: $\cos(alpha) = A/C$, $\sin(alpha) = B/C$, $alpha = invtan[\sin(alpha)/\cos(alpha)]$
$C\cos(w0t - alpha)$
$p = c/(2m)$: $p>0$, $c>0$, $m>0$
$w_1 = (p^2 - w_0^2)^{1/2}$
Crit Damped: $e^{-pt}(A + Bt)$
OverDamped: $Ae^{(-p - w1)} + Be^{(-p + w1)}$
Under Damped: $Ae^{-pt}\cos(w1*t) + Be^{-pt}\sin(w1*t)$ :: $x = Ce^{-pt}\cos(w1*t - alpha)$
Frank Mitchell and Erik Fallon

Normal: $dp/dt = KP$
Logistic: $dp/dt = K(M - P)P$
Logistic with harvesting: $dp/dt = K(M - P)P - h$
Extinction/Explosion: $dp/dt = K(P-M)$
$P(t) = M*P_0 / (P_0 + (M - P_0)e^{-KMt}$
$P(t) = Ae^{kt}$
Austin Scampini

Volume of a cylinder: $V=\pi*r^2$
Volume of a cone: $\int A(x)\,dx$
Torricelli's law:
$v^2=2*g*h$
$dV/dt= -a*v$
$dV/dt= -k\sqrt{y}$
$V(y)=\int A*(\bar{Y})\,d\bar{Y}$
Kristen Schandall