Final Formula Sheet Math 1552

Simple interest, compounded interest and effective rate.

$$I = Prt$$

$$A = P(1 + rt)$$

$$P = \frac{A}{(1 + rt)}$$

For the following $i = \frac{r}{m},\ n = mt$

$$A = P(1 + i)^n$$

$$P = \frac{A}{(1+i)^n}$$

$$A = Pe^{rt}$$

$$P = Ae^{-rt}$$

$$r_E = (1 + i)^m - 1$$

$$r_E = e^r - 1$$

Future values, sinking fund payments, present values and amortization of an Annuity

For the following $i = \frac{r}{m},\ n = mt$

$$S = R\left[\frac{(1+i)^n - 1}{i}\right]$$

$$R = \frac{Si}{(1 + i)^n - 1}$$

$$P = R\left[\frac{1 - (1 + i)^{-n}}{i}\right]$$

$$R = \frac{Pi}{1 - (1 + i)^{-n}}$$

Formula sheet for derivative and integrals

$$(f \cdot g)' = fg' + gf'$$

$$\left(\frac{f}{g}\right)' = \frac{gf' - fg'}{g^2}$$

$$[f(x)^n]' = nf(x)^{n-1} \cdot f'(x)$$

$$[e^{f(x)}]' = e^{f(x)} \cdot f'(x)$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + c$$

$$\int ax^n dx = \frac{ax^{n+1}}{n+1} + c$$

$$\int [f(x) \pm g(x)]dx = \int f(x)dx \pm \int g(x)dx$$

$$\int e^{kx} dx = \frac{e^{kx}}{k} + c$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$\int_0^{q_0} [p_0 - S(q)]dq \qquad \int_0^{q_0} [D(q) - p_0]dq$$