Math 156: Final Exam Formula Sheet

$$a_n = a_m + (n-m)d$$

$$a_n = a_m r^{n-m}$$

$$S_k = \frac{k}{2}(a_m + a_n)$$

$$S_k = \frac{a_m(1-r^k)}{1-r}$$

$$S_k = \frac{k}{2}[2a_m + (n-m)d]$$

$$S_\infty = \frac{a_m}{1-r}$$

$$\geq \left(1 - \frac{1}{k^2}\right)$$

$$z = \frac{x-\mu}{\sigma} \qquad \text{or} \qquad z = \frac{x-\overline{x}}{s}$$

$$n(A \text{ or } B) = n(A) + n(B) - n(AB)$$

$$P(E) = \frac{n(E)}{n_{tot}}$$

$$P(A) = 1 - P(\overline{A})$$

$$P(A \text{ or } B) = P(A) + P(B) - P(AB)$$

$$\mu = \overline{x} \pm \frac{z\sigma}{\sqrt{n}}$$

confidence level	z
0.90	1.645
0.95	1.960
0.98	2.326
0.99	2.576

Math 156: Laws of Logic

Law	Logic	Boolean Algebra
Identity	$p \wedge 1 \Leftrightarrow p$	$A \cdot 1 = A$
	$p \vee 1 \Leftrightarrow 1$	$A + 1 = 1$
	$p \wedge 0 \Leftrightarrow 0$	$A \cdot 0 = 0$
	$p \vee 0 \Leftrightarrow p$	$A + 0 = A$
Idempotent	$p \wedge p \Leftrightarrow p$	$AA = A$
	$p \vee p \Leftrightarrow p$	$A + A = A$
Complement	$\sim(\sim p) \Leftrightarrow p$	$\overline{\overline{A}} = A$
	$p \wedge \sim p \Leftrightarrow 0$	$A\overline{A} = 0$
	$p \vee \sim p \Leftrightarrow 1$	$A + \overline{A} = 1$
Commutative	$p \wedge q \Leftrightarrow q \wedge p$	$AB = BA$
	$p \vee q \Leftrightarrow q \vee p$	$A + B = B + A$
Associative	$(p \wedge q) \wedge r \Leftrightarrow p \wedge (q \wedge r)$	$(AB)C = A(BC)$
	$(p \vee q) \vee r \Leftrightarrow p \vee (q \vee r)$	$(A + B) + C = A + (B + C)$
De Morgan's	$\sim(p \wedge q) \Leftrightarrow \sim p \vee \sim q$	$\overline{AB} = \overline{A} + \overline{B}$
	$\sim(p \vee q) \Leftrightarrow \sim p \wedge \sim q$	$\overline{A + B} = \overline{A}\ \overline{B}$
Distributive	$p \wedge (q \vee r) \Leftrightarrow (p \wedge q) \vee (p \wedge r)$	$A(B + C) = AB + AC$
	$p \vee (q \wedge r) \Leftrightarrow (p \vee q) \wedge (p \vee r)$	$A + BC = (A + B)(A + C)$
Absorption	$p \wedge (p \vee q) \Leftrightarrow p$	$A(A + B) = A$
	$p \wedge (\sim p \vee q) \Leftrightarrow p \wedge q$	$A(\overline{A} + B) = AB$
	$p \vee (p \wedge q) \Leftrightarrow p$	$A + AB = A$
	$p \vee (\sim p \wedge q) \Leftrightarrow p \vee q$	$A + \overline{A}B = A + B$