9. SURDS AND INDICES

I IMPORTANT FACTS AND FORMULAE I

1. LAWS OF INDICES:

(i) $a^m \times a^n = a^{m+n}$
(ii) $a^m / a^n = a^{m-n}$
(iii) $(a^m)^n = a^{mn}$
(iv) $(ab)^n = a^n b^n$
(v) $(a/b)^n = (a^n / b^n)$
(vi) $a^0 = 1$

2. SURDS: *Let a be a rational number and* n *be a positive integer such that* $a^{1/n} = {}^n\text{sqrt}(a)$ *is irrational. Then* ^{n}sqrt(a) *is called a surd of order* n.

3. LAWS OF SURDS:

(i) $\sqrt[n]{a} = a^{1/2}$
(ii) $\sqrt[n]{ab} = \sqrt[n]{a} * \sqrt[n]{b}$
(iii) $\sqrt[n]{a/b} = \sqrt[n]{a} \ / \ \sqrt[n]{b}$
(iv) $(\sqrt[n]{a})^n = a$
(v) $\sqrt[m]{(\sqrt[n]{(a)})} = \sqrt[mn]{(a)}$
(vi) $(\sqrt[n]{a})^m = \sqrt[n]{a^m}$