Six Essential Properties of Cryptographic Hash Functions

Deterministic

Same input
= Same output

Fixed Length

256 bits
(always)

Avalanche Effect

1 bit change
= 50% flip

**H(x)
Hash
Function**

**Preimage
Resistant**

Cannot reverse
hash to input

**Second Preimage
Resistant**

Cannot find
alternate input

**Collision
Resistant**

Cannot find
two same hashes