# Rules for integrands of the form $(a + b\,x)^m$

1: $\int \frac{1}{a + b\,x}\,dx$

- **Reference: G&R 2.111.1.2, CRC 27, A&S 3.3.15**
- **Derivation: Reciprocal rule for integration**
- **Rule 1.1.1.1:**

$$\int \frac{1}{a + b\,x}\,dx \to \frac{\text{Log}[a + b\,x]}{b}$$

- **Program code:**

```
Int[1/(a_.+b_.*x_),x_Symbol] :=
  Log[a+b*x]/b /;
FreeQ[{a,b},x]
```

2: $\int (a + b\,x)^m\,dx$ when $m \neq -1$

- **Reference: G&R 2.111.1.1, CRC 23, A&S 3.3.14**
- **Derivation: Power rule for integration**
- **Rule 1.1.1.2: If $m \neq -1$, then**

$$\int (a + b\,x)^m\,dx \to \frac{(a + b\,x)^{m+1}}{b\,(m + 1)}$$

- **Program code:**

```
Int[(a_.+b_.*x_)^m_.,x_Symbol] :=
  (a+b*x)^(m+1)/(b*(m+1)) /;
FreeQ[{a,b,m},x] && NeQ[m,-1]
```