

1.8 n^r and $12^3 = 1,728$

1.9 $\binom{r+n-1}{r}$ and $\binom{5+3-1}{5} = \binom{7}{5} = 21$

1.10 Substitute $r-n$ for r into result of 1.9

$$\binom{r-n+n-1}{r-n} = \binom{r-1}{r-n} \text{ and } \binom{5-1}{5-3} = \binom{4}{2} = 6$$

- 1.14** (a) Set $x = 1$ and $y = 1$
(b) Set $x = 1$ and $y = -1$
(c) Set $x = 1$ and $y = a - 1$

- 1.27** (a) 5
(b) 4

- 1.31** (a) 6; (b) $6 \cdot 5 = 30$; (c) $5 \cdot 4 = 20$ first one fixed; (d) $6 + 30 + 20 = 56$

1.37 (a) $\frac{14 \cdot 13}{2 \cdot 1} = 91$; (b) $\frac{14 \cdot 13 \cdot 12}{3 \cdot 2 \cdot 1} = 364$

1.41 $7! = 5040$

1.42 (a) $5! = 120$; (b) $\frac{5!}{2!} = 60$

1.52 $3^{10} = 59,049$

1.54 $\binom{12+6-1}{12} = \binom{17}{12} = \binom{17}{5} = 6,188$