Exercise LXV.

1. $\frac{3.4.5.\ldots.(2+r)}{\lfloor r}\, x^r$ and $21x^5$

2. $(-1)^r \left(\frac{4.5.6.\ldots.(3+r)}{\lfloor r}\right) x^r$ and $-56x^5$

3. $(-1)^r \left(\frac{2.5.8.\ldots.(3r-1)}{\lfloor r \times 3^r}\right) x^r$ and $-\frac{308}{729} x^5$

4. $(-1)^r \left(\frac{4.1.-2.\ldots.(7-3r)}{\lfloor r \times 3^r}\right) x^r$ and $\frac{8}{729} x^5$

5. $(-1)^r \left(\frac{7.9.11.\ldots.(5+2r)}{\lfloor r \times 2^r}\right) x^r$ and $-\frac{9009}{256} x^5$

6. $(-1)^r \left(\frac{8.11.\ldots.(5+3r)}{\lfloor r \times 3^r}\right) x^r$ and $-\frac{10472}{729} x^5$

7. $a^{-(r+1)} x^r$ and $a^{-6} x^5$

8. $(-1)^r \left(\frac{6.1.4.\ldots.(5r-11)}{\lfloor r \times 10^r}\right) a^{\frac{6}{5}-r}\, x^r$ and $-\frac{63}{250000}\, a^{-\frac{12}{5}} x^5$

9. $(r+1)\, 2^r x^r$ and $160x^5$

10. $(-1)^r \left(\frac{5.7.\ldots.(3+2r)}{\lfloor r \times 3^r}\right) x^{2r}$ and $\frac{385}{216} x^5$

11. $(-1)^r \times \frac{2.7.\ldots.(5r-3)}{\lfloor r \times 5^r}\, a^{2r+\frac{1}{3}} x^{-\frac{5}{3}r}$; and $\frac{119}{625} a^{\frac{13}{3}} x^{-\frac{5}{3}}$

12. $(r+1)\, a^{\frac{r+2}{2}} x^{-\frac{r}{2}}$; and $5a^3 x^{-2}$.

13. 1024 14. 128 15. 0 16. 4096

17. The 4th term = 32 18. The 4th = the 5th = $4\frac{1}{2}$.

19. 13th term 20. 9th = 10th = $\frac{19702683}{390625}$

Exercise LXVI.

1. $x < 5$ 2. $x > 12$ 3. $x < 3$

4. $x > -10$ 6. $x > a$ and $< b$ 9. $x = 5$