

$$\begin{aligned} & ((a+b)^r - rab)((a+b)^r + rab) \\ & ((a+b)^r)((a-b)^r) = ((a+b)(a-b))^r = (a^2 - b^2)^r \\ & (\sqrt{4} + 1 - \sqrt{4} - 1)^r = (\sqrt{4} + 1 + \sqrt{4} - 1\sqrt{4} - 1)^r = (2\sqrt{4} - 2\sqrt{4})^r \\ & 4\left(\frac{4+1}{1} - 2\sqrt{4}\right) = 14(2 - \sqrt{4}) \end{aligned}$$

$$\begin{aligned} & \left((a + \frac{1}{a}) + \sqrt{a}\right)\left((a + \frac{1}{a}) - \sqrt{a}\right)^r = r^4 \\ & (a + \frac{1}{a})^r - r = (a^r + \frac{1}{a^r} + r\sqrt{a})^r = a^r + \frac{1}{a^r} + r \\ & 1 - 4\sqrt{a} + \frac{1}{1 - 4\sqrt{a}} + r = 9 - 4\sqrt{a} + \frac{1 + 4\sqrt{a}}{9 - 4\sqrt{a}} = 19 \quad \begin{matrix} r^2 = r^4 \\ \boxed{r = 1} \end{matrix} \end{aligned}$$

$$\begin{aligned} & \omega \sqrt{\frac{r^2}{r} \propto \frac{r}{r}} \propto r^{\frac{2}{r}} = \omega \sqrt{\frac{1}{r}} \propto r^{\frac{1}{r}} = r^{\frac{1}{10}} \propto \frac{r}{r^{\frac{1}{10}}} = r^{\frac{9}{10}} = r^{\frac{1}{10}} = \omega \\ & (rA)^{-\frac{1}{r}} = (r^r)^{-\frac{1}{r}} = r^{-1} = \left(\frac{1}{r}\right) \end{aligned}$$

$$\begin{aligned} & \sqrt[r]{a} = rV a^{\frac{1}{V}} \\ & a^{\frac{1}{V}} = a^{-\frac{1}{V}} = a^{-r} = rV \\ & \frac{1}{a^{\frac{1}{V}}} = rV \quad \frac{1}{a} = \sqrt[r]{rV} \\ & \frac{r\sqrt{r} - r}{1 + \sqrt{r}} \times \frac{1 - \sqrt{r}}{1 - \sqrt{r}} = \frac{r\sqrt{r} - 9 - r + r\sqrt{r}}{-r} \\ & \frac{9\sqrt{r} - 14}{-r} = -3\sqrt{r} + 9 \end{aligned}$$

$$\begin{aligned} & (\sqrt{x+a} - \sqrt{x-\varepsilon} - r)^r \\ & x+a+x-\varepsilon - \sqrt{(x+a)(x-\varepsilon)} = \varepsilon \\ & r(x+a-\varepsilon) - \sqrt{(x+a)(x-\varepsilon)} = \varepsilon \\ & r(x+a) = r\sqrt{(x+a)(x-\varepsilon)} + 1 \\ & (x+a+x-\varepsilon + r\sqrt{(x+a)(x-\varepsilon)})^r \\ & \frac{r(x+a) - \varepsilon + r\sqrt{(x+a)(x-\varepsilon)}}{r(x+a) - \varepsilon} \\ & r(x+a) - \varepsilon + r\sqrt{(x+a)(x-\varepsilon)} = 1 \\ & r(x+a) - \varepsilon = 1 \end{aligned}$$