

$$((a^r + b^r) - rab)^r ((a^r + b^r) + rab)^r = (a - b)^2 (a + b)^2 = (a^2 - b^2)^2$$

$$\Rightarrow \left((\sqrt[2]{\sqrt{4}-r})^r - (\sqrt[2]{\sqrt{4}+r})^r \right)^2 = \sqrt{4-r} + \sqrt{4+r} - r\sqrt{r} = (r\sqrt{4-r}\sqrt{r})^2$$

$$(r(\sqrt{4}-\sqrt{r}))^r = 2(4-r-8\sqrt{r}) = 8r - 8\sqrt{r} = 8(r-\sqrt{r})$$

$$14(r-\sqrt{r}) = 8(r-\sqrt{r}) \quad + = 14 \checkmark$$

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$$\sqrt{4-r}\sqrt{r} = (\sqrt{4}-\sqrt{r})^r \Rightarrow \sqrt{(\sqrt{4}-\sqrt{r})^r} = \sqrt[2]{\sqrt{4}-\sqrt{r}} \Rightarrow a = \sqrt[2]{\sqrt{4}-\sqrt{r}}$$

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$$(a + \frac{1}{a} + \sqrt{r})^r (a + \frac{1}{a} - \sqrt{r})^r = (a^r + \frac{1}{a^r} + r - r) = a^2 + r + \frac{1}{a^2}$$

$$\Rightarrow (r-\sqrt{r})^r + \frac{1}{(r-\sqrt{r})^r} = \sqrt{4-r} + \frac{1}{\sqrt{4-r}} + r = \sqrt{4-r} + \frac{\sqrt{4-r}}{\sqrt{4-r}} + r = 2\sqrt{4-r} + r = 14 \quad + = 14 \checkmark$$

$$\sqrt[2]{r^r} \times \sqrt[2]{r^r} \times \sqrt[2]{r^r} = \sqrt[2]{r^r}$$

$$\frac{1}{\sqrt{4-r}} \times \frac{\sqrt{4-r}}{\sqrt{4-r}} = \frac{\sqrt{4-r}}{\sqrt{4-r}} = \sqrt{4-r}$$

$$r^{\frac{r}{2}} \times r^{\frac{r}{2}} \times r^{\frac{r}{2}} = r^{\frac{3r}{2}} = r^{\frac{r}{2}} \checkmark$$

$$(r \times 2)^{-\frac{1}{r}} = \frac{1}{r^{\frac{1}{r}}} = \sqrt[r]{\frac{1}{r}} = \frac{1}{r} \checkmark$$

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$$\sqrt{a} = r^{\frac{r}{2}} \times a^{\frac{1}{2}} \Rightarrow a = (r^{\frac{r}{2}} \times a^{\frac{1}{2}})^2 \Rightarrow a = r^r \times a$$

$$\left(\frac{1}{a^r} = r^r \right)^{\frac{1}{r}} = \frac{1}{a} = r \Rightarrow a^{\frac{r}{r}} = \frac{1}{r} \Rightarrow a = \frac{1}{r}$$

$$\frac{a}{a^{\frac{1}{2}}} = r^{\frac{r}{2}} \Rightarrow \frac{1}{a^{\frac{1}{2}}} = r^{\frac{r}{2}}$$

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$$\frac{1}{\sqrt{r}} - r = r\sqrt{r} - r \Rightarrow \frac{r\sqrt{r}-r}{1+\sqrt{r}} = \frac{r(\sqrt{r}-1)}{\sqrt{r}+1} \times \frac{\sqrt{r}-1}{\sqrt{r}-1} = \frac{r(r-\sqrt{r}+1)}{r} = r \times \frac{(r-\sqrt{r}+1)}{r} = r \checkmark$$

$$(\sqrt{x+a})^r = x+a \quad x'+2-x'-2 = (\sqrt{x+a} + \sqrt{x-2}) / (\sqrt{x+a} - \sqrt{x-2})$$

$$(\sqrt{x-2})^r = x-2$$

$$a+2 = r(\sqrt{x+a} + \sqrt{x-2})$$

$$\sqrt{x+a} + \sqrt{x-2} = \frac{a+2}{r}$$

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$$\frac{a+2}{r} - r = \frac{a+2-2}{r} = \frac{a}{r} \checkmark$$