Facit til kursusgang 4: Rødder

1. Svarene er:

$$2, \qquad 5, \qquad \frac{1}{9}, \qquad 3, \qquad 4, \qquad 100.$$

2. Svarene er:.

$$\frac{\sqrt{2}}{2}, \qquad \sqrt{2}, \qquad \sqrt{2}, \qquad 3\sqrt{3}, \qquad \frac{1}{2}, \qquad 7^{2/3}.$$

3. Svarene er:

$$4, \qquad 9, \qquad \sqrt{8} = \sqrt{4 \cdot 2} = \sqrt{4}\sqrt{2} = 2\sqrt{2}, \qquad 100000, \qquad -5.$$

4. Svarene er:.

$$x^{4/3}, \qquad x^{-1/6}, \qquad 2^{-3/4}x^{1/8}, \qquad x^{-1/2}, \qquad x^{5/2}.$$

5. Svarene er:

$$2\sqrt{x}, \qquad \sqrt{3}, \qquad \sqrt{7}, \qquad \frac{1}{x+y}.$$

   Svaret i 5d) kan fås ved følgende udregninger:

$$\begin{aligned} \frac{\sqrt{x}-\sqrt{y}}{\sqrt{x}+\sqrt{y}} \cdot \frac{2\sqrt{xy}}{x-y} &\Leftrightarrow \\ (\frac{\sqrt{x}-\sqrt{y})(\sqrt{x}+\sqrt{y})}{(\sqrt{x}+\sqrt{y})(\sqrt{x}+\sqrt{y})} \cdot \frac{2\sqrt{xy}}{x-y} &\Leftrightarrow \\ \frac{x-y}{x+\sqrt{xy}+\sqrt{xy}+y} \cdot \frac{2\sqrt{xy}}{x-y} &\Leftrightarrow \\ \frac{1}{x+y} & \end{aligned}$$

6. Svarene er:.

$$\sqrt{2}+2, \qquad 9\sqrt{2}-4, \qquad 1.$$

7. Svarene er:

$$a^{11/12}b^{4/3}, \qquad a^{-1/4}, \qquad a^{-3}.$$

8. Ved at anvende en kvadratsætning fås

$$(1+\sqrt{3})^2 = 1+3+2\sqrt{3} = 4+2\sqrt{3},$$

   og fra definitionen af kvadratroden følger at

$$1+\sqrt{3} = \sqrt{4+2\sqrt{3}}$$

9. Svarene er:

$$\frac{\sqrt{7}(\sqrt{2}+6)}{3}, \qquad \frac{(1-\sqrt{3})^2}{\sqrt{2}(1-\sqrt{3})} = \frac{\sqrt{2}-\sqrt{6}}{2}, \qquad 24.$$