

- Solve $25^x - 125 = 0$

$$25^x = 125$$

$$(5^2)^x = 5^3$$

$$5^{2x} = 5^3$$

$$2x = 3$$

$$x = \frac{3}{2}$$

- Solve $8^{r-1} = \frac{1}{2}$

$$(2^3)^{r-1} = 2^{-1}$$

$$2^{3r-3} = 2^{-1}$$

$$3r-3 = -1$$

$$3r = 2$$

$$r = \frac{2}{3}$$

- Solve $3^{2x-7} = 27^{x/2}$

$$3^{2x-7} = (3^3)^{x/2}$$

$$3^{2x-7} = 3^{3x/2}$$

$$2x-7 = \frac{3}{2}x$$

$$\frac{1}{2}x = 7$$

$$x = 14$$