2.8

1) $4^{\frac{1}{2}} = (2^2)^{\frac{1}{2}} = 2^{2\cdot\frac{1}{2}} = 2^1 = 2$

2) $81^{\frac{1}{4}} = (3^4)^{\frac{1}{4}} = 3^{4\cdot\frac{1}{4}} = 3^1 = 3$

3) $1024^{\frac{1}{10}} = (2^{10})^{\frac{1}{10}} = 2^{10\cdot\frac{1}{10}} = 2^1 = 2$

4) $0^{\frac{1}{5}} = (0^5)^{\frac{1}{5}} = 0^{5\cdot\frac{1}{5}} = 0^1 = 0$

5) $36^{\frac{3}{2}} = (6^2)^{\frac{3}{2}} = 6^{2\cdot\frac{3}{2}} = 6^3 = 216$

6) $32^{-\frac{2}{5}} = (2^5)^{-\frac{2}{5}} = 2^{5\cdot(-\frac{2}{5})} = 2^{-2} = \dfrac{1}{2^2} = \dfrac{1}{4}$

7) $\left(\dfrac{1}{9}\right)^{-\frac{1}{2}} = \left(\dfrac{1}{3^2}\right)^{-\frac{1}{2}} = (3^{-2})^{-\frac{1}{2}} = 3^{(-2)\cdot(-\frac{1}{2})} = 3^1 = 3$

8) $0{,}0625^{\frac{1}{4}} = \left(\dfrac{625}{10\,000}\right)^{\frac{1}{4}} = \left(\dfrac{5^4}{10^4}\right)^{\frac{1}{4}} = \dfrac{5^{4\cdot\frac{1}{4}}}{10^{4\cdot\frac{1}{4}}} = \dfrac{5^1}{10^1} = \dfrac{5}{10} = \dfrac{1}{2}$

9) $1^{\frac{3}{5}} = (1^5)^{\frac{3}{5}} = 1^{5\cdot\frac{3}{5}} = 1^3 = 1$

10) $0^{\frac{5}{7}} = (0^7)^{\frac{5}{7}} = 0^{7\cdot\frac{5}{7}} = 0^5 = 0$

11) $0{,}01^{-\frac{3}{2}} = \left(\dfrac{1}{100}\right)^{-\frac{3}{2}} = \left(\dfrac{1}{10^2}\right)^{-\frac{3}{2}} = (10^{-2})^{-\frac{3}{2}} = 10^{(-2)\cdot(-\frac{3}{2})} = 10^3 = 1000$

12) $1000^{-\frac{1}{3}} = (10^3)^{-\frac{1}{3}} = 10^{3\cdot(-\frac{1}{3})} = 10^{-1} = \dfrac{1}{10^1} = \dfrac{1}{10}$

13) $25^{0,5} = (5^2)^{\frac{1}{2}} = 5^{2\cdot\frac{1}{2}} = 5^1 = 5$

14) $625^{-0,25} = (5^4)^{-\frac{1}{4}} = 5^{4\cdot(-\frac{1}{4})} = 5^{-1} = \dfrac{1}{5^1} = \dfrac{1}{5}$

15) $32^{-0,2} = (2^5)^{-\frac{1}{5}} = 2^{5\cdot(-\frac{1}{5})} = 2^{-1} = \dfrac{1}{2^1} = \dfrac{1}{2}$

16) $100^{-1,5} = (10^2)^{-\frac{3}{2}} = 10^{2\cdot(-\frac{3}{2})} = 10^{-3} = \dfrac{1}{10^3} = \dfrac{1}{1000}$