Arithmetic - Powers/Exponents

Evaluate parenthesised expressions - Ex10

The examples below are intended to be used as exercises in mental arithmetic and the student should ***not*** make use of a calculator or other aid. Some of these examples involve the use of parentheses which may control evaluation order.

1. $6^{-2}1296^{1/4}12^{2} =$
2. $4^{-1/2}9^{3/4}12^{1/2} =$
3. $9^{1}18^{1/4}2^{3/4}3^{-3/2} =$
4. $25^{1/2}5^{-2}15625^{1/3} =$
5. $9^{3}32^{-1/5}4^{1/2} =$
6. $32^{1/5}4^{1/8}8^{1/4} =$
7. $175^{-1/2}343^{1/2}5^{2} =$
8. $(7^{2})^{1/4}(343)^{-1/2}14^{2} =$
9. $(11^{3})^{-1/3}5^{3}44^{1}16^{-1/2} =$
10. $(196)^{1/2}14^{-1}2^{2} =$
11. $(196^{1}2^{2})^{1/2}7^{-1}3^{2} =$
12. $(512^{1}2^{3})^{-1/3}12^{2}3^{-1} =$
13. $(961)^{1/2}31^{-1}3^{4} =$
14. $(729)^{1/3}9^{-1}2^{4} =$
15. $8^{2}(1024)^{-1/2}2^{1} =$
16. $15^{1/2}25^{3/4}(3^{-1})^{1/2} =$
17. $(12^{2}3^{2})^{1/4}5^{2}4^{-1/2} =$
18. $(13^{2}2^{3})^{1/3}169^{1/6} =$
19. $216^{3/4}6^{-1/4} =$
20. $22^{2}(4^{3}5^{3})^{1/3}11^{-1} =$