

Practice**Real Exponents and Exponential Functions****Simplify each expression.**

1. $(2^{\sqrt{2}})^{\sqrt{18}}$

2. $13^{\sqrt{6}} \cdot 13^{\sqrt{24}}$

3. $125^{\sqrt{11}} \div 5^{\sqrt{11}}$

4. $(n^{\sqrt{3}})^{\sqrt{75}}$

5. $32^{\sqrt{3}} \cdot 16^{\sqrt{2}}$

6. $(r^{\sqrt{3}} + p^{\sqrt{5}})^2$

7. $(n^{\sqrt{6}} + w^{\sqrt{3}})(n^{\sqrt{6}} - w^{\sqrt{3}})$

8. $(r^{\sqrt{3}} \cdot p^{\sqrt{5}})^2$

Solve each equation.

9. $7^{6x} = 7^{2x-20}$

10. $3^{6x-5} = 9^{4x-3}$

11. $9^{2x-1} = 27^{x+4}$

12. $5^{2x+3} = (\sqrt{5})^{x+4}$

13. $2^{3x-1} = \left(\frac{1}{8}\right)^x$

14. $\left(\frac{1}{16}\right)^{x+1} = \left(\frac{1}{8}\right)^{2x-1}$