Algebra 2 // Topic 5 "Worksheet B"

1) $6^{\frac{1}{4}} \cdot 6^{\frac{3}{4}}$

$= 6^{\frac{1}{4}+\frac{3}{4}} = 6^{\frac{4}{4}}$

$= 6^2 = \boxed{36}$

2) $9^{\frac{1}{5}} \cdot 9^{\frac{2}{5}}$

$= 9^{\frac{1}{5}+\frac{2}{5}}$

$= \boxed{9^{\frac{3}{5}}}$

3) $3^{\frac{1}{2}} \cdot 3^{\frac{2}{3}}$

$= 3^{\frac{1}{2}+\frac{2}{3}}$

$= \boxed{3^{7/6}}$

$\frac{3\cdot 1}{3\cdot 2} + \frac{2\cdot 2}{3\cdot 2}$

$= \frac{3}{6} + \frac{4}{6}$

$= \frac{7}{6}$

4) $16^{\frac{3}{8}} \cdot 16^{\frac{1}{8}}$

$= 16^{\frac{4}{8}} = 16^{\frac{1}{2}}$

$= \sqrt{16} = \boxed{\pm 4}$

5) $13^{\frac{4}{5}} \cdot 13^{-\frac{2}{5}}$

$= \boxed{13^{2/5}}$

6) $2^{-\frac{1}{7}} \cdot 2^{\frac{5}{7}}$

$= \boxed{2^{4/7}}$

7) $7^{\frac{5}{4}} \cdot 7^{-\frac{1}{2}}$

$= \boxed{7^{3/4}}$

$\frac{5}{4} - \frac{1\cdot 2}{2\cdot 2}$

$\frac{5}{4} - \frac{2}{4}$

$\frac{3}{4}$

8) $12^{\frac{1}{2}} \cdot 12^{-\frac{1}{3}}$

$= \boxed{12^{1/6}}$

$\frac{3\cdot 1}{3\cdot 2} - \frac{1\cdot 2}{3\cdot 2}$

$\frac{3}{6} - \frac{2}{6}$

$\frac{1}{6}$

9) $\left(3^{1/4}\right)^{2/5}$

$= 3^{\frac{2}{20}} = \boxed{3^{1/10}}$

10) $\left(7^{1/2}\right)^{1/2}$

$= \boxed{7^{1/4}}$

11) $\left(5^{1/2}\right)^4$

$= 5^{4/2} = 5^2$

$= \boxed{25}$

12) $\left(100^{2/3}\right)^{3/4}$

$= 100^{6/12} = 100^{1/2}$

$= \sqrt{100} = \boxed{\pm 10}$

13) $(25 \cdot 4)^{1/2}$ → or

$= (100)^{1/2}$

$= \sqrt{100}$

$= \boxed{\pm 10}$

14) $(8 \cdot 64)^{1/3}$ →

$= 8^{1/3} \cdot 64^{1/3}$

$= 2 \cdot 4$

$= \boxed{8}$

15) $\left(\frac{25}{36}\right)^{\frac{1}{2}}$

$= \frac{25^{1/2}}{36^{1/2}}$

$= \boxed{\frac{5}{6}}$

16) $\left(\frac{-27}{8}\right)^{1/3}$

$\frac{(-27)^{1/3}}{8^{1/3}} = \frac{\sqrt[3]{-27}}{\sqrt[3]{8}}$

$\boxed{\frac{-3}{2}}$