HA2T
7.1 Day 2 WS

Name Key

Simplify. Write all final answers with positive exponents.

1. $\left(\frac{x^7}{y^4}\right)^8\left(\frac{y^{10}}{x^{10}}\right)^3$

$\frac{x^{56}}{y^{32}} \cdot \frac{y^{30}}{x^{30}} = \boxed{\frac{x^{26}}{y^2}}$

2. $\left(\frac{a^{11}}{b^{11}}\right)^5\left(\frac{b^9}{a^7}\right)^7$

$\frac{a^{55}}{b^{55}} \cdot \frac{b^{63}}{a^{49}} = \boxed{a^6b^8}$

3. $\left(\frac{3k^5m^8}{2k^3m^7}\right)^5$

$\frac{243k^{25}m^{40}}{32k^{15}m^{35}} = \boxed{\frac{243k^{10}m^5}{32}}$

4. $\frac{3^{723}}{3^{721}} = 3^2 = \boxed{9}$

5. $\frac{7 \bullet 4^{2001}}{2 \bullet 4^{1997}} = \frac{7 \cdot 4^4}{2}$

$= \frac{7 \cdot 256}{2} = 7 \cdot 128$

$\boxed{896}$

6. $\frac{8 \bullet 6^{1776}}{3 \bullet 6^{1773}} = \frac{8 \cdot 6^3}{3} = \frac{8 \cdot 216}{3}$

$\boxed{576}$

7. $\frac{\left(9^{54}\right)^{10}}{\left(9^{49}\right)^{11}}$

$\frac{9^{540}}{9^{539}} = \boxed{9}$

8. $11p^7 \bullet 4p^{-12}$

$44p^{-5}$

$\boxed{\frac{44}{p^5}}$

9. $\left(3x^2y^{-3}\right)^4\left(2x^{-4}y^5\right)^3$

$3^4x^8y^{-12}\cdot 2^3x^{-12}y^{15}$

$81x^{-4}y^3\cdot 8$

$\boxed{\frac{648y^3}{x^4}}$

10. $\left(1001x^{-4}y^{-3}\right)\div\left(77x^6y^{-7}\right)$

$\frac{1001x^{-4}y^{-3}}{77x^6y^{-7}} = 13x^{-10}y^4$

$\boxed{\frac{13y^4}{x^{10}}}$

11. $\frac{3^4a^{-7}b^3d^{-4}}{43^0a^{-4}b^{-5}c^6}$

$\frac{81a^{-3}b^8d^{-4}}{c^6} = \boxed{\frac{81b^8}{a^3c^6d^4}}$

12. $3x^{-\frac{1}{2}}\bullet 4x^{\frac{2}{3}}$

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

13. $\left(64x^2\right)^{-\frac{1}{6}}\left(32x^5\right)^{-\frac{2}{5}}$

$64^{-1/6}x^{-1/3}\cdot 32^{-2/5}x^{-2}$

$(2^6)^{-1/6}x^{-7/3}(2^5)^{-2/5}$

$2^{-1}x^{-7/3}\cdot 2^{-2}$

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

$\boxed{\frac{1}{8x^{7/3}}}$

14. $\sqrt[4]{16x^{12}y^{-4}}$

$\left(2^4x^{12}y^{-4}\right)^{\frac{1}{4}}$

$2x^3y^{-1}$

$\boxed{\frac{2x^3}{y}}$