Harnik.

Math 10 Name: Key

Practice for Quiz 1

Simplify each expression using exponent rules. Compute all numerical values. Show all steps.

1. $b^2 \cdot b^4 \cdot b^1$

$= b^{2+4+1} = b^7$

2. $\frac{x^8}{x^4}$

$= x^4$

3. $(y^3)^6$

$= y^{18}$

4. $(x^3y^2)^3$

$= x^9y^6$

5. $(x^3y^4)(x^2y^2)$

$= x^5y^6$

6. $p^2 \cdot (p^5)^2$

$= p^2 \cdot p^{10} = p^{12}$

7. $(-6x^3)^2$

$= (-6)^2(x^3)^2$

$= 36x^6$

8. $(2x^3y)^6$

$= 64x^{18}y^6$

9. $\left(\frac{a}{b}\right)^2 = \frac{a^2}{b^2}$

10. $\frac{m^5n^4}{mn^2} = m^4n^2$

11. $\left(\frac{2b}{5c}\right)^3$

$= \frac{2^3b^3}{5^3c^3} = \frac{8b^3}{125c^3}$

12. $\left(\frac{3x^4}{y^6}\right)^5$

$3^5 = 81 \times 3$

$= \frac{3^5x^{20}}{y^{30}} = \frac{243x^{20}}{y^{30}}$

13. $(5x^2y^3)^2 \cdot (2x^3y^4)^3$

$= 5^2x^4y^6 \cdot 2^3x^9y^{12}$

$= 25x^4y^6 \cdot 8x^9y^{12}$

$= 200x^{13}y^{18}$

14. $\frac{x^3y}{xy^5} \cdot \frac{x^2y^9}{x^8} = \frac{x^5y^{10}}{x^9y^5}$

$= x^{-4}y^5$

$= \frac{y^5}{x^4}$

15. $(c^4)\left(c^{\frac{3}{2}}\right)$

$4 + \frac{3}{2}$

$= \frac{8}{2} + \frac{3}{2} = \frac{11}{2}$

$= c^{11/2}$

16. $\frac{(a^{\frac{2}{3}})^{\frac{3}{2}}}{\left(a^{\frac{1}{3}}\right)^9} = \frac{a^6}{a^3}$

$= a^3$

17. $(m^4n^6)^{\frac{1}{2}}$

$= m^2n^3$

18. $\frac{z^{\frac{1}{3}} \times z^{\frac{4}{5}}}{z^{\frac{4}{5}} \times z^{\frac{3}{10}}}$

$= \frac{z^{\frac{5}{15}} \times z^{\frac{12}{15}}}{z^{\frac{8}{10}} \times z^{\frac{3}{10}}} = \frac{z^{17/15}}{z^{11/10}}$

$\frac{17}{15} - \frac{11}{10}$

$= z^{\frac{34}{30} - \frac{33}{30}} = z^{1/30}$

Find q.

19. $\left(x^{\frac{2}{3}}\right)^{q} = x^{\frac{4}{3}}$

$\frac{3}{2}\times\frac{2}{3}q = \frac{4}{3}\times\frac{3}{2}$

$q = \frac{4}{2}$

$q = 2$

20. $\frac{y^{\frac{2}{3}}}{y^{q}} = y^{\frac{11}{12}}$

$\frac{2}{3} - q = \frac{11}{12}$

$q = \frac{2}{4\times 3} - \frac{11}{12}$

$q = \frac{8}{12} - \frac{11}{12}$

$q = -\frac{3}{12}$

$q = -\frac{1}{4}$