Name:

BECA / Dr. Huson / Geometry 04 Analytic Geometry

4.21 Challenge: Exponent rules **CCSS.HSN.RN.A.2**

Simplify, leaving no negative or fractional exponents. No calculators. No notes.

Exponent rules

1. $2^2 \times 2^3 = 2^k$
   Find k.

2. $a^2b \times a^3b^2$

3. $\dfrac{x^5y^4}{xy^2}$

4. $(a^3)^3$

Radicals and exponents

5. $\sqrt[5]{3^{10}}$

6. $\dfrac{\sqrt[3]{8}}{\sqrt{36}}$

7. $\sqrt{x^2y^4}$

8. $\sqrt{\dfrac{9a^4b^2}{c^4}}$

Fractional and negative exponents

9. $16^{\frac{1}{2}}$

10. $4^{\frac{5}{2}}$

11. $(x^4y^2)^{\frac{1}{2}}$

12. $16^{-\frac{3}{4}}$

13. $\left(\dfrac{2}{3}\right)^{-2}$

14. $(m^5)^{-3}$

Combine like terms

15. $5\sqrt{2} + 7\sqrt{2}$

16. $a\sqrt{5} - b\sqrt{5}$

17. $\sqrt{18} - 2\sqrt{2}$

Mixed

18. $2x^2y^4 \times 2x^2y^{-2}$

19. $7x^{-2}y \times 3x^{-2}y^2$

20. $\dfrac{2\sqrt{25x^2}}{\sqrt[3]{1000x^3}}$

21. $\dfrac{2x^2\sqrt{y^2} + \sqrt[3]{x^6y^3} - y\sqrt{4x^4}}{xy}$