Lesson 19 Test: Product Rules for Exponents

For problems 1–10, simplify. Write improper fractions where needed.

1) $35^{11} \cdot 35^{3}$ _____

2) $7^{4} \cdot 7^{-2} \cdot 7^{8}$ _____

3) $x^{5} \cdot x^{3}$ _____

4) $a^{\frac{2}{3}} \cdot a^{\frac{5}{3}}$ _____

5) $a^{6}b^{5} \cdot a^{3}b$ _____

6) $3a^{14}b^{-3} \cdot 5ab^{7}$ _____

7) $(x^{3})^{3}$ _____

8) $(5^{14})^{\frac{1}{3}}$ _____

9) $(x^{5}y^{9})^{4}$ _____

10) $(7^{5}a^{12}b^{7})^{2}$ _____

11) Find the area of a rectangle with sides $2x^{5}y^{11}$ and $x^{4}y^{2}$.

CONTINUE

12) Find the volume of a sphere with a radius of $2a^5b$ units using the formula $V = \frac{4}{3}\pi r^3$. Write your answer in terms of *pi*.

13) Find the area of a triangle with a base of $3x^5y$ units and a height of $6xy^3$ units.

For problems 14–16, simplify.

14) $\left(a^{12}b^6\right)^{\frac{1}{3}} \cdot a^2b^5$ _____

15) $8y^2z \cdot \left(2x^3y\right)^2$ _____

16) $\left(a^{\frac{1}{2}}b^{\frac{3}{2}}\right)^4 \cdot a^{-1}b^{-2}$ _____

STOP