

**5.2.D1 ~ Power Functions**Write the power function in the form  $f(x) = kx^a$ .**PRODUCT RULE:**  $a^m a^n = a^{m+n}$ 

1.  $f(x) = 4x^{-5} \cdot x^{10}$

2.  $f(x) = x(3x^4)(2x^7)$

**QUOTIENT RULE:**  $\frac{a^m}{a^n} = a^{m-n}$ 

3.  $f(x) = \frac{8x^4}{2x^{20}}$

4.  $f(x) = \frac{2x^{14}}{-x^{-7}}$

**POWER RULE:**  $(a^m)^n = a^{mn}$ 

5.  $f(x) = -6(x^4)^2$

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

**POWER OF A PRODUCT RULE:**  $(ab)^m = a^m b^m$ 

7.  $f(x) = (-3x)^3$

8.  $f(x) = (2x^{-3})^2$

**POWER OF A QUOTIENT RULE:**  $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$ 

9.  $f(x) = \left(\frac{-4}{x}\right)^3$

10.  $f(x) = \left(\frac{x}{2}\right)^5$

**RADICAL RULE:**  $\sqrt[n]{a^m} = a^{\frac{m}{n}}$ 

11.  $f(x) = \sqrt[3]{x^5}$

12.  $f(x) = -4\sqrt[4]{x^7}$

**ALL RULES**

13.  $f(x) = \sqrt{9x^5}$

14.  $f(x) = \sqrt[3]{-8x^4}$

15.  $f(x) = \frac{(-x^3)^3}{6x}$

16.  $f(x) = -x^6 \left(\frac{2}{x}\right)^5$

$$17. f(x) = \left(\frac{-35x^7}{-7x^2}\right)^3$$

$$18. f(x) = \frac{-5}{8} \left(\frac{2x^{-8}}{x^{-2}}\right)^3$$

$$19. f(x) = (3x\sqrt{x^3})^2$$

$$20. f(x) = \frac{4}{\sqrt{16x}}$$

$$21. f(x) = 3x^5 \cdot (-2x)^4$$

$$22. f(x) = \frac{(3x^5)^3}{9x^6}$$

$$23. f(x) = \frac{4x^8}{2x^{-2} \cdot 6x^9}$$

$$24. f(x) = \left(\frac{(2x)^3}{x^5}\right)^2$$

$$25. f(x) = \frac{(x^{-3})^4 \cdot x^5}{2x^{-3}}$$

$$26. f(x) = \frac{(21x^{-13})(2x^5)}{7x^{-6}}$$