

<p>1. Simplify</p> <p>(a) $\left(-\frac{1}{7}\right)^3$</p> <p>(b) $(-0.5)^3$</p>	<p>2. Simplify completely.</p> <p>(a) $\sqrt[3]{-1}$</p> <p>(b) $\sqrt[4]{\frac{1}{81}}$</p>
<p>3. Simplify</p> <p>(a) $\sqrt{160}$</p> <p>(b) $\sqrt{72}$</p>	<p>4. Simplify.</p> <p>(a) $\sqrt{40a^7}$</p> <p>(b) $\sqrt{\frac{48}{x^2}}$</p>

5. Simplify.

(a) $\sqrt[5]{x^{12}}$

(b) $\sqrt[3]{125x^{20}}$

6. Simplify.

$$\sqrt{\frac{600a^6b^3}{121c^2}}$$

7. Simplify.

(a) $\sqrt{70} \cdot \sqrt{5}$

(b) $\frac{\sqrt{72}}{\sqrt{12}}$

8. Simplify

$$\frac{\sqrt{90a^2b^5}}{\sqrt{125b}}$$

9. Simplify.

(a) $8\sqrt{10} + \sqrt{10}$

(b) $\sqrt{40} + \sqrt{90}$

10. Simplify.

(a) $\frac{2}{\sqrt{2}}$

(b) $\frac{1}{7+\sqrt{5}}$

11. Simplify.

(a) $100^{\frac{3}{2}}$

(b) $(a^{12})^{\frac{1}{2}}$

12. Simplify. Write your answers with rational exponents.

(a) $a^{\frac{3}{8}} \cdot a^{\frac{1}{4}}$

(b) $\frac{a^{\frac{4}{9}}}{a^{\frac{1}{4}}}$

13. Simplify using rational exponents.
Write your answer as a radical.

$$\sqrt[3]{9}$$

14. Simplify using rational exponents.
Then write the expression as a single radical.

$$\sqrt{a} \cdot \sqrt[3]{a}$$

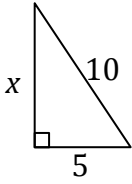
15. Solve.

$$\sqrt{8x-1} = 3$$

16. Solve.

$$\sqrt{x+12} = x$$

17. Find the length of the unknown side as a radical in simplest form.



18. Simplify.

(a) $\sqrt{-13}$

(b) $\sqrt{-160}$

19. Simplify. Write your answer in the form $a + bi$.

(a) $(10 + 4i) - (1 + 2i)$

(b) $(5 + 3i)(4 - 2i)$

20. Simplify. Write your answer in the form $a + bi$.

$$\frac{1}{6 + 2i}$$

Rules for Exponents	
Product Rule	$a^m \cdot a^n = a^{m+n}$
Quotient Rule	$\frac{a^m}{a^n} = a^{m-n} \quad (a \neq 0)$
Power Rules	$(a^m)^n = a^{mn}$ $(ab)^m = a^m b^m$ $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m} \quad (b \neq 0)$
Zero Exponent	$a^0 = 1 \quad (a \neq 0)$
Negative Exponent	$a^{-n} = \frac{1}{a^n} \quad (a \neq 0)$
Rational Exponent	$(a \geq 0 \text{ when } n \text{ is even})$

Rules for Radicals	
Definition	$\sqrt[n]{a^n} = a \quad (\text{for } a \geq 0 \text{ if } n \text{ is even})$
Product Rule	$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$
Quotient Rules	$\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$
Distributive Property	$a\sqrt{x} + b\sqrt{x} = (a+b)\sqrt{x}$
Definition	$a^{\frac{m}{n}} = \sqrt[n]{a^m} \quad (\text{for } a \geq 0 \text{ if } n \text{ is even})$

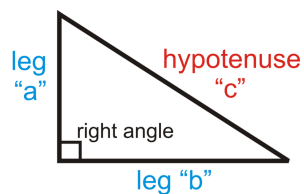
Power Property of Equality

For any real numbers, a , b , and n , such that a^n is a real number,

$$\text{if } a = b, \text{ then } a^n = b^n$$

Complex numbers = $\{a + bi \mid a \in \mathbb{R}, b \in \mathbb{R}, \text{ and } i = \sqrt{-1}\}$. Note that $i^2 = -1$.

Pythagorean Theorem



$$a^2 + b^2 = c^2$$