099 § 7.1 #s 1, 5, 9, 13, 17, 21, 25, 29, 31, 35, 39, 43, 45, 47, 53, 54, 55, 59, 63, 69, 73, 77-80

#s 1-12 Simplify. Assume variables represent positive real #s.

(1) $\sqrt{100} = \boxed{10}$

(5) $\sqrt{0.0001} = \boxed{.01}$

$\sqrt{\frac{1}{10000}} = \sqrt{\left(\frac{1}{100}\right)^2} = \frac{1}{100}$

(9) $\sqrt{x^{10}} = \sqrt{(x^5)^2} = \boxed{x^5}$

(13) $\sqrt{7} \approx \boxed{2.646}$

(17) $\sqrt{200} \approx \boxed{14.142}$

#s 19-28 Find each cube root.

(21) $\sqrt[3]{\frac{1}{8}} = \boxed{\frac{1}{2}}$, since $\left(\frac{1}{2}\right)^3 = \frac{1^3}{2^3} = \frac{1}{8}$

(25) $\sqrt[3]{x^{12}} = \sqrt[3]{x^{4 \cdot 3}} = \sqrt[3]{(x^4)^3} = \boxed{x^4}$

(29) #s 29-42 Find each root.

$\sqrt[3]{64} = \sqrt[3]{4^3} = \boxed{4}$

(31) $\sqrt[4]{-16}$ | NOT Real! | Even index. Negative radicand.

(35) $\sqrt[5]{x^{20}} = \sqrt[5]{(x^4)^5} = \boxed{x^4}$

(39) $\sqrt{81x^4} = \sqrt{9^2(x^2)^2} = \boxed{9x^2}$

099 § 7.1 #s 43, 45, 47, 53, 54, 55, 59, 63, 69, 73, 77-80

#s 43-54 Simplify. Assume variables represent ANY real number

(43) $\sqrt{(-8)^2} = \sqrt{64} = \sqrt{8^2} = \boxed{8}$ (It's $|-8|$.)

(45) $\sqrt[3]{(-8)^3} = \boxed{-8}$

(47) $\sqrt{4x^2} = \sqrt{2^2 x^2} = \sqrt{(2x)^2} = \boxed{|2x|}$

(53) $\sqrt{x^2+4x+4} = \sqrt{(x+2)^2} = \boxed{|x+2|}$

Scratch: Best if you recognize it's a perfect square trinomial.

But you can always guess & check:

$(x+4)(x+1) = x^2+5x+4$ No

$(x+2)(x+2) = x^2+4x+4$ Yes

(54) $\sqrt{x^2-8x+16} = \sqrt{(x-4)^2} = \boxed{|x-4|}$

#s 55-76 Simplify each radical. Assume that variables represent POSITIVE numbers.

(55) $-\sqrt{121} = \boxed{-11}$ (59) $\sqrt{y^{12}} = \boxed{y^6}$

099 §7.1 #s 63, 69, 73, 77-80

(63) $\sqrt[3]{-27x^{12}y^9} = \sqrt[3]{(-3)^3(x^4)^3(y^3)^3}$

$= \sqrt[3]{(-3x^4y^3)^3} = \boxed{-3x^4y^3}$

(69) $\sqrt{\frac{25}{49}} = \sqrt{\frac{5^2}{7^2}} = \sqrt{\left(\frac{5}{7}\right)^2} = \boxed{\frac{5}{7}}$

(73) $-\sqrt[3]{\frac{z^{21}}{27x^3}} = -\sqrt[3]{\frac{(z^7)^3}{3^3x^3}} = -\sqrt[3]{\left(\frac{z^7}{3x}\right)^3}$

$= \boxed{-\frac{z^7}{3x}}$

#s 77-80 $f(x) = \sqrt{2x+3}$, $g(x) = \sqrt[3]{x-8}$

(77) $f(0) = \sqrt{2(0)+3} = \boxed{\sqrt{3}}$

(78) $g(0) = \sqrt[3]{0-8} = \sqrt[3]{-8} = \boxed{-2}$

(79) $g(7) = \sqrt[3]{2(7)+3} = \boxed{\sqrt[3]{17}}$

(80) $f(-1) = \sqrt{2(-1)+3} = \sqrt{1} = \boxed{1}$