

Tell whether each is true or false for all real numbers.True 1)  $\sqrt[3]{x}$  is always a real numberFalse 2)  $\sqrt{x+1}$  is always a real numberTrue 3)  $\sqrt[3]{x+1}$  is always a real numberTrue 4)  $\sqrt{x^2+1}$  is always a real numberSimplify each expression if it represents a real number. If it can't be simplified, state "can't be simplified."

4)  $\sqrt{16}$

4

5)  $-\sqrt{16}$

-4

6)  $\sqrt{-16}$

CBS

7)  $\sqrt[4]{16}$

2

8)  $\sqrt{144}$

12

9)  $\sqrt{-144}$

CBS

10)  $\sqrt[4]{-144}$

CBS

11)  $\sqrt{7^2}$

7

12)  $\sqrt{98}$

 $7\sqrt{2}$ 

13)  $\sqrt{27}$

 $3\sqrt{3}$ 

14)  $\sqrt{126}$

 $3\sqrt{14}$ 

15)  $\sqrt[3]{80}$

 $2\sqrt[3]{10}$ 

16)  $\sqrt[3]{40}$

 $2\sqrt[3]{5}$ 

17)  $\sqrt{\frac{1}{64}}$

 $\frac{1}{4}$ 

18)  $\sqrt[3]{\frac{1}{64}}$

 $-\frac{1}{4}$ 

19)  $\sqrt[4]{\frac{81}{16}}$

 $\frac{3}{2}$ 

20)  $\sqrt[3]{10^{-3}}$

 $\frac{1}{10}$ 

21)  $\sqrt[3]{a^6}$

 $a^2$ 

22)  $\sqrt{a^8}$

 $a^4$ 

23)  $\sqrt[3]{375a^3b^5}$

 $5\sqrt[3]{3}$ 

24)  $\sqrt{\frac{3}{16}}$

 $\frac{\sqrt{3}}{4}$ 

25)  $\sqrt{\frac{y^2}{x^5}}$

 $\frac{y}{x^2\sqrt{x}} \cdot \frac{\sqrt{x}}{\sqrt{x}} = \frac{y\sqrt{x}}{x^3}$ 

26)  $\sqrt{\frac{4}{3}}$

 $\frac{2\sqrt{3}}{3}$ 

27)  $\frac{2}{\sqrt{2}} \sqrt{2}$

2

$$28) \sqrt{\frac{2}{3}} \frac{\sqrt{6}}{3}$$

$$29) \sqrt[3]{45} \cdot \sqrt[3]{12}$$
$$3 \sqrt[3]{20}$$

$$30) \sqrt{18x^2}$$
$$3x\sqrt{2}$$

$$31) \sqrt[3]{16v^4}$$
$$2v \sqrt[3]{2v}$$

$$32) \sqrt{5} + \sqrt{10}$$
$$CBS$$

$$33) \sqrt{7} + \sqrt[3]{7}$$
$$CBS$$

$$34) \sqrt{5} + \sqrt{2} + 2\sqrt{5}$$
$$3\sqrt{5} + \sqrt{2}$$

$$35) \sqrt{18} + \sqrt{12}$$
$$3\sqrt{2} + 2\sqrt{3}$$

$$36) \sqrt{2} + \sqrt{\frac{1}{2}}$$
$$\frac{3\sqrt{2}}{2}$$

$$37) \sqrt{12} - \sqrt{27}$$
$$-\sqrt{3}$$

$$38) \sqrt[3]{16} - \sqrt[3]{52}$$
$$2\sqrt[3]{2} - \sqrt[3]{52}$$

$$39) \sqrt{3} + \sqrt{30} + \sqrt{300}$$
$$11\sqrt{3} + \sqrt{30}$$

$$40) \sqrt{\frac{3}{4}} + \sqrt{\frac{27}{4}}$$
$$2\sqrt{3}$$

$$41) \sqrt{2}(\sqrt{8} + \sqrt{10})$$
$$4 + 2\sqrt{5}$$

$$42) \sqrt[3]{54} + \sqrt[3]{40} + \sqrt[3]{16}$$
$$5\sqrt[3]{2} + 2\sqrt[3]{5}$$

$$43) \sqrt{\frac{27}{5}} - \sqrt{\frac{3}{5}}$$
$$\frac{2\sqrt{15}}{5}$$

$$44) \sqrt{15}(\sqrt{3} + 2\sqrt{5})$$
$$3\sqrt{5} + 10\sqrt{3}$$

$$45) \sqrt{10a} - \frac{\sqrt{5a}}{\sqrt{2}} + \sqrt{\frac{2a}{5}}$$
$$\frac{7\sqrt{10a}}{10}$$

$$46) (\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})$$
$$3$$

$$47) (2 + \sqrt{3})(2 - \sqrt{3})$$
$$1$$

$$48) (\sqrt{3} - \sqrt{2})^2$$
$$5 - 2\sqrt{6}$$

$$49) (3 + \sqrt{7})(3 - \sqrt{7})$$
$$2$$

$$50) (6 - \sqrt{3})(4 + \sqrt{3})$$
$$21 + 2\sqrt{3}$$

$$51) (\sqrt{7} + \sqrt{2})^2$$
$$9 + 2\sqrt{14}$$