

Homework 1.2: # 15, 21, 22, 25, 29, 37, 47, 73

15) a. $-3^2 = -9$

b. $(-3)^2 = (-3)(-3) = 9$

c. $(\frac{1}{3})^4 (-3)^2 = \frac{1}{3^4} = \frac{1}{9 \cdot 9} = \frac{1}{9}$

21) a. $\sqrt[4]{9} = \sqrt[4]{\sqrt{9}} = \sqrt[4]{3} = \frac{2}{3}$

b. $\sqrt[4]{256} = \sqrt[4]{4^4} = 4$

c. $\sqrt[6]{64} = \sqrt[6]{2^6} = \sqrt[6]{2^6} = \frac{1}{2}$

22) a. $\sqrt{7} \cdot \sqrt{28} = \sqrt{7 \cdot 28} = \sqrt{196} = 14$

b. $\frac{\sqrt{48}}{\sqrt{3}} = \left(\frac{48}{3}\right)^{\frac{1}{2}} = (16)^{\frac{1}{2}} = 4$

c. $\sqrt[4]{24} \sqrt[4]{54} = \sqrt[4]{1296} = 6$

25) $x=3$ $y=4$

$$\sqrt{x^2+y^2} = \sqrt{(3)^2+(4)^2}$$

$$= \sqrt{9+16}$$

$$= \sqrt{25}$$

$$= 5$$

29) $\sqrt{32} + \sqrt{18} = \sqrt{16} \cdot \sqrt{2} + \sqrt{9} \cdot \sqrt{2}$

$$= 4\sqrt{2} + 3\sqrt{2}$$

$$= 7\sqrt{2}$$

37) a. $\frac{y^{10}y^0}{y^7} = \frac{y^{10}}{y^7} = y^3$

b. $\frac{x^6}{x^{10}} = \frac{1}{x^4} = x^{-4}$

c. $\frac{a^9a^{-2}}{a} = \frac{a^9}{a^3} = a^6$

47) a. $\left(\frac{a^2}{b}\right)^5 \left(\frac{a^3b^2}{c^3}\right)^3 = \frac{a^{10}}{b^5} \cdot \frac{a^9b^6}{c^3}$
$$= \frac{a^{19}b}{c^3}$$

b. $\frac{(u^{-1}v^2)^2}{(u^3v^{-2})^3} = \frac{u^{-2}v^4}{u^9v^{-6}} = \frac{v^{10}}{u^{11}}$

73) a. $\sqrt{4st^2} \sqrt[6]{s^3t^2} = 2ts^{1/2} \cdot s^{1/2}t^{1/3}$
$$= 2t^{4/3}s$$

b. $\frac{\sqrt[4]{x^7}}{\sqrt[4]{x^3}} = \left(\frac{x^7}{x^3}\right)^{1/4} = (x^4)^{1/4} = x$