

3.4] Radical Math

$$1^2 = 1$$

$$2^2 = 4$$

$$3^2 = 9$$

$$4^2 = 16$$

$$5^2 = 25$$

$$6^2 = 36$$

$$7^2 = 49$$

$$8^2 = 64$$

$$9^2 = 81$$

$$10^2 = 100$$

$$11^2 = 121$$

$$12^2 = 144$$

$$13^2 = 169$$

$$14^2 = 196$$

$$15^2 = 225$$

$$16^2 = 256$$

$$17^2 = 289$$

$$18^2 = 324$$

$$19^2 = 361$$

$$20^2 = 400$$

$$1) 2\sqrt{48}$$

$$= 2\sqrt{16 \times 3}$$

$$= 2(4)\sqrt{3}$$

$$= 8\sqrt{3}$$

$$2) -\sqrt{20}$$

$$= -\sqrt{4 \times 5}$$

$$= -2\sqrt{5}$$

$$3) 7\sqrt{288b^4}$$

$$= 7\sqrt{144 \times 2 \times b^4}$$

$$= 84b^2\sqrt{2}$$

$$4) -5\sqrt{45n^3}$$

$$n^3 = n^2 \times n$$

$$= -5\sqrt{9 \times 5 n^3}$$

$$= -15n\sqrt{5n}$$

$$n^7 = n^6 \times n$$

$$5) -2\sqrt{12} - 3\sqrt{8} + 3\sqrt{3} + 2\sqrt{27}$$

Like Radicals

$$= -2\sqrt{4 \times 3} - 3\sqrt{4 \times 2} + 3\sqrt{3} + 2\sqrt{9 \times 3}$$

$$= -4\sqrt{3} - 6\sqrt{2} + 3\sqrt{3} + 6\sqrt{3}$$

$$= 5\sqrt{3} - 6\sqrt{2}$$

$$2x + 3x = 5x$$

$$6) 2\sqrt{45} - \sqrt{8} - 2\sqrt{20} - 2\sqrt{18}$$

$$= 2\sqrt{9 \times 5} - \sqrt{4 \times 2} - 2\sqrt{4 \times 5} - 2\sqrt{9 \times 2}$$

$$= 6\sqrt{5} - 2\sqrt{2} - 4\sqrt{5} - 6\sqrt{2}$$

$$= 2\sqrt{5} - 8\sqrt{2}$$

$$7) 2\sqrt{6} \times \sqrt[4]{5}$$


$$= 8\sqrt{30}$$

$$8) -3\sqrt{10} \times \sqrt{2}$$


$$= -18\sqrt{20}$$

$$= -18\sqrt{4 \times 5}$$

$$= -36\sqrt{5}$$

$$9) \sqrt{10}(-\sqrt{5} + 4)$$



$$= -\sqrt{50} + 4\sqrt{10}$$

$$= -\sqrt{25 \times 2} + 4\sqrt{10}$$

$$= -5\sqrt{2} + 4\sqrt{10}$$

$$10) \sqrt{15}(-2\sqrt{6} - 4\sqrt{10})$$

$$-2\sqrt{90} - 4\sqrt{150}$$

$$-2\sqrt{9 \times 10} - 4\sqrt{25 \times 6}$$

$$-6\sqrt{10} - 20\sqrt{6}$$

$$11) (\sqrt{2} + \sqrt{3})(2\sqrt{2} - 5\sqrt{3})$$

$$= 2\sqrt{4} - 5\sqrt{6} + 2\sqrt{6} - 5\sqrt{9}$$

$$= 4 - 3\sqrt{6} - 15$$

$$= -11 - 3\sqrt{6}$$

$$12) (2\sqrt{3} + \sqrt{2})(\sqrt{5} - \sqrt{2})$$