

РЕАЛНИ БРОЈЕВИ

- бројевни изрази који у себи садрже квадрат и корен -

1. Израчунај бројевну вредност израза:

$$1) -2^2 \cdot 3 - (-3)^2 \cdot 4 = -4 \cdot 3 - 9 \cdot 4 = -12 - 36 = \boxed{-48}$$

$$2) -2^2 + (-3)^2 - 4 \cdot 2^2 - (-1)^2 - 3^2 = -4 + 9 - 4 \cdot 4 - 1 - 9 = 5 - 16 - 10 = \boxed{-21}$$

$$3) (-2)^2 - 3^2 - 4 \cdot 2^2 - 1^2 = 4 - 9 - 4 \cdot 4 - 1 = -5 - 16 - 1 = \boxed{-22}$$

$$4) (-2)^2 \cdot (7 - (-3)^2)^2 = 4 \cdot (7 - 9)^2 = 4 \cdot (-2)^2 = 4 \cdot 4 = \boxed{16}$$

$$5) 2 \cdot \left(\frac{1}{2}\right)^2 + (-0,3) : 3^2 = 2 \cdot \frac{1}{4} + \left(-\frac{3}{10}\right) : 9 = \frac{1}{2} + \left(-\frac{\cancel{3}^1}{10}\right) \cdot \frac{1}{\cancel{9}^3} = \frac{1}{2} - \frac{1}{30} = \frac{15}{30} - \frac{1}{30} = \frac{14}{30} = \boxed{\frac{7}{15}}$$

$$6) \frac{5^2}{3} - \frac{5}{3^2} - \left(\frac{4}{3}\right)^2 = \frac{25}{3} - \frac{5}{9} - \frac{16}{9} = \frac{75}{9} - \frac{5}{9} - \frac{16}{9} = \frac{54}{9} = \boxed{6}$$

$$7) -4 \cdot \left(-\frac{1}{4}\right)^2 + \frac{3}{2^2} = -\cancel{4}^1 \cdot \frac{1}{\cancel{16}^4} + \frac{3}{4} = -\frac{1}{4} + \frac{3}{4} = \frac{2}{4} = \boxed{\frac{1}{2}}$$

$$8) \left(\frac{2}{5}\right)^2 - \frac{2}{5^2} - \frac{2^2}{5} = \frac{4}{25} - \frac{2}{25} - \frac{4}{5} = \frac{4}{25} - \frac{2}{25} - \frac{20}{25} = \boxed{-\frac{18}{25}}$$

$$9) \left(-1\frac{2}{3}\right)^2 \cdot \left(0,2^2 - \left(-\frac{3^2}{5}\right)\right) = \left(-\frac{5}{3}\right)^2 \cdot \left(0,04 - \left(-\frac{9}{5}\right)\right) = \frac{25}{9} \cdot \left(\frac{1}{25} + \frac{9}{5}\right) = \frac{25}{9} \cdot \left(\frac{1}{25} + \frac{45}{25}\right) = \\ = \frac{\cancel{25}^1}{9} \cdot \frac{46}{\cancel{25}^1} = \frac{46}{9} = \boxed{5\frac{1}{9}}$$

$$10) \frac{1}{5} : \left((-0,1)^2 - \frac{1}{10}\right) = \frac{1}{5} : \left(0,01 - \frac{1}{10}\right) = \frac{1}{5} : \left(\frac{1}{100} - \frac{1}{10}\right) = \frac{1}{5} : \left(\frac{1}{100} - \frac{10}{100}\right) = \frac{1}{5} : \left(-\frac{9}{100}\right) \\ = \frac{1}{\cancel{5}^1} \cdot \left(-\frac{\cancel{100}^{20}}{9}\right) = -\frac{20}{9} = \boxed{-2\frac{2}{9}}$$

2. Израчунај бројевну вредност израза:

$$1) \frac{2}{5} \cdot \sqrt{25} - 6 \cdot \frac{1}{2} + 4 \cdot \sqrt{6\frac{1}{4}} = \frac{2}{5} \cdot 5 - 6 \cdot \frac{1}{2} + 4 \cdot \sqrt{\frac{25}{4}} = 2 - 3 + 4 \cdot \frac{5}{4} = -1 + 5 = \boxed{4}$$

$$2) \frac{2}{3} \cdot \sqrt{81} - 4 \cdot \sqrt{\frac{25}{36}} + 6 \cdot \sqrt{7\frac{1}{9}} = \frac{2}{3} \cdot 9 - \cancel{4}^2 \cdot \frac{5}{\cancel{6}^3} + 6 \cdot \sqrt{\frac{64}{9}} = 6 - \frac{10}{3} + \cancel{6}^2 \cdot \frac{8}{\cancel{6}^1} = 6 - \frac{10}{3} + 16 \\ = \frac{18}{3} - \frac{10}{3} + \frac{48}{3} = \frac{56}{3} = \boxed{18\frac{2}{3}}$$

$$3) \sqrt{10^2 + 44} + \frac{\sqrt{121}}{11} : \frac{5}{\sqrt{225}} = \sqrt{100 + 44} + \frac{11}{11} : \frac{5}{15} = \sqrt{144} + 1 : \frac{5}{15} = 12 + 1 \cdot \frac{15}{5} = 12 + 3 = \boxed{15}$$

$$4) \sqrt{0,01} - \frac{1}{2} \cdot \sqrt{0,04} + 2 \cdot \sqrt{\frac{9}{16}} = 0,1 - \frac{1}{2} \cdot 0,2 + 2 \cdot \frac{3}{4} = \frac{1}{10} - \frac{1}{2} \cdot \frac{1}{5} + \cancel{2}^1 \cdot \frac{3}{\cancel{4}^2} = \frac{1}{10} - \frac{1}{10} + \frac{3}{2} = \frac{3}{2} = \boxed{1\frac{1}{2}}$$

$$5) \sqrt{1 + \frac{9}{16}} \cdot \sqrt{1 - \frac{21}{25}} = \sqrt{\frac{16}{16} + \frac{9}{16}} \cdot \sqrt{\frac{25}{25} - \frac{21}{25}} = \sqrt{\frac{25}{16}} \cdot \sqrt{\frac{4}{25}} = \frac{\cancel{5}^1}{\cancel{4}^2} \cdot \frac{\cancel{2}^1}{\cancel{5}^1} = \boxed{\frac{1}{2}}$$

$$6) \sqrt{1 - \frac{5}{9}} \cdot \sqrt{1 + \frac{5}{4}} = \sqrt{\frac{9}{9} - \frac{5}{9}} \cdot \sqrt{\frac{4}{4} + \frac{5}{4}} = \sqrt{\frac{4}{9}} \cdot \sqrt{\frac{9}{4}} = \frac{2}{3} \cdot \frac{3}{2} = \boxed{1}$$

$$7) \frac{3}{8} \cdot \sqrt{3 - \frac{11}{25}} + \sqrt{1,96} = \frac{3}{8} \cdot \sqrt{\frac{75}{25} - \frac{11}{25}} + 1,3 = \frac{3}{8} \cdot \sqrt{\frac{64}{25}} + 1,3 = \frac{\cancel{3}^1}{\cancel{8}^1} \cdot \frac{\cancel{8}^1}{\cancel{3}^1} + 1,3 = 1 + 1,3 = \boxed{2,3}$$

$$8) \sqrt{1 + \frac{9}{16}} - \sqrt{0,01} + \frac{9}{16} : \sqrt{\frac{9}{64}} = \sqrt{\frac{16}{16} + \frac{9}{16}} - 0,1 + \frac{9}{16} : \frac{3}{8} = \sqrt{\frac{25}{16}} - \frac{1}{10} + \frac{9}{16} \cdot \frac{8}{3} = \frac{5}{4} - \frac{1}{10} + \frac{\cancel{9}^3}{\cancel{16}^2} \cdot \frac{\cancel{8}^1}{\cancel{3}^1} \\ = \frac{5}{4} - \frac{1}{10} + \frac{3}{2} = \frac{25}{20} - \frac{2}{20} + \frac{30}{20} = \frac{53}{20} = \boxed{2\frac{13}{20}}$$

$$9) \sqrt{1,44} - \frac{7}{5} \cdot \sqrt{2 - \frac{17}{49}} = 1,2 - \frac{7}{5} \cdot \sqrt{\frac{98}{49} - \frac{17}{49}} = 1,2 - \frac{7}{5} \cdot \sqrt{\frac{81}{49}} = 1,2 - \frac{\cancel{7}^1}{5} \cdot \frac{9}{\cancel{7}^1} = \frac{6}{5} - \frac{9}{5} = \boxed{-\frac{3}{5}}$$

3. Израчунај бројевну вредност израза:

$$1) \sqrt{5^2 - 4^2} - \sqrt{(5-4)^2} + 5\sqrt{(-4)^2} = \sqrt{25-16} - \sqrt{1^2} + 5\sqrt{16} = \sqrt{9} - \sqrt{1} + 5 \cdot 4 = 3 - 1 + 20 = \boxed{22}$$

$$2) \sqrt{(13-5)^2} - \sqrt{13^2 - 5^2} + 13\sqrt{(-5)^2} = \sqrt{8^2} - \sqrt{169-25} + 13\sqrt{25} = \sqrt{64} - \sqrt{144} + 13 \cdot 5 = \\ = 8 - 12 + 65 = -4 + 65 = \boxed{61}$$

4. Израчунај бројевну вредност израза:

$$1) (-3\sqrt{5})^2 + (3\sqrt{2})^2 - 2 \cdot (2\sqrt{10})^2 = 45 + 18 - 2 \cdot 40 = 63 - 80 = \boxed{-17}$$

$$2) (-3)^2 + (3\sqrt{2})^2 - (5\sqrt{3})^2 = 9 + 18 - 75 = 27 - 75 = \boxed{-48}$$

$$(-3\sqrt{5})^2 = (-3)^2 \cdot \sqrt{25} = 9 \cdot 5 = 45$$

$$(3\sqrt{2})^2 = 3^2 \cdot \sqrt{4} = 9 \cdot 2 = 18$$

$$(2\sqrt{10})^2 = 2^2 \cdot \sqrt{100} = 4 \cdot 10 = 40$$

$$(3\sqrt{2})^2 = 3^2 \cdot \sqrt{4} = 9 \cdot 2 = 18$$

$$(5\sqrt{3})^2 = 5^2 \cdot \sqrt{9} = 25 \cdot 3 = 75$$

5. Израчунај бројевну вредност израза:

$$1) \sqrt{1+\frac{9}{16}} + \sqrt{\left(-\frac{3}{4}\right)^2} - 2 \cdot \frac{\sqrt{(-5)^2}}{4} = \sqrt{\frac{16}{16} + \frac{9}{16}} + \left|-\frac{3}{4}\right| - 2 \cdot \frac{|-5|}{4} = \sqrt{\frac{25}{16}} + \frac{3}{4} - \cancel{2^1} \cdot \frac{5}{\cancel{4^2}} =$$

$$= \frac{5}{4} + \frac{3}{4} - \frac{5}{2} = \frac{5}{4} + \frac{3}{4} - \frac{10}{4} = \frac{2}{4} = \boxed{\frac{1}{2}}$$

$$2) 2\frac{1}{2} \cdot \sqrt{1+\frac{11}{25}} - \frac{1}{2} \cdot \sqrt{(-4)^2} = \frac{5}{2} \cdot \sqrt{\frac{25}{25} + \frac{11}{25}} - \frac{1}{2} \cdot |-4| = \frac{5}{2} \cdot \sqrt{\frac{36}{25}} - \frac{1}{\cancel{2^1}} \cdot \cancel{4^2} = \frac{\cancel{5^1}}{\cancel{2^1}} \cdot \frac{\cancel{6^3}}{\cancel{5^1}} - 2$$

$$= 3 - 2 = \boxed{1}$$

$$3) \frac{3}{5} \cdot \sqrt{(-25)^2} + 1\frac{1}{6} \cdot \sqrt{1-\frac{28}{64}} - 7 \cdot \sqrt{\left(-\frac{2}{7}\right)^2} = \frac{3}{5} \cdot |-25| + \frac{7}{6} \cdot \sqrt{\frac{64}{64} - \frac{28}{64}} - 7 \cdot \left|-\frac{2}{7}\right| = \frac{3}{\cancel{5^1}} \cdot \cancel{25^5} + \frac{7}{6} \cdot \sqrt{\frac{36}{64}} - \cancel{7^1} \cdot \frac{2}{\cancel{7^1}}$$

$$= 15 + \frac{7}{\cancel{6^1}} \cdot \frac{\cancel{6^1}}{8} - 2 = 15 + \frac{7}{8} - 2 = 13 + \frac{7}{8} = \boxed{13\frac{7}{8}}$$

$$4) \left(2\sqrt{\left(-\frac{1}{2}\right)^2} + 2\right) : (3\sqrt{2})^2 = \left(2 \cdot \sqrt{\frac{1}{4}} + 2\right) : (9 \cdot \sqrt{4}) = \left(\cancel{2^1} \cdot \frac{1}{\cancel{2^1}} + 2\right) : (9 \cdot 2)$$

$$= (1+2) : 18 = 3 : 18 = \frac{3}{18} = \boxed{\frac{1}{6}}$$

$$5) \frac{3}{4} \cdot \sqrt{(-16)^2} + 1\frac{1}{7} \cdot \sqrt{1-\frac{15}{64}} - 9 \cdot \sqrt{\left(-\frac{2}{3}\right)^2} = \frac{3}{4} \cdot |-16| + 1\frac{1}{7} \cdot \sqrt{\frac{64}{64} - \frac{15}{64}} - 9 \cdot \left|-\frac{2}{3}\right| = \frac{3}{4} \cdot 16 + \frac{8}{7} \cdot \sqrt{\frac{49}{64}} - 9 \cdot \frac{2}{3}$$

$$= \frac{3}{\cancel{4^1}} \cdot \cancel{16^4} + \frac{\cancel{8^1}}{\cancel{7^1}} \cdot \frac{\cancel{7^1}}{\cancel{8^1}} - \cancel{9^3} \cdot \frac{2}{\cancel{3^1}} = 12 + 1 - 6 = \boxed{7}$$

6. Израчунај бројевну вредност израза:

$$1) \sqrt{8\frac{2}{5}} : \sqrt{5\frac{5}{6}} + \sqrt{0,2} \cdot \sqrt{3\frac{1}{5}} = \sqrt{\frac{42}{5}} : \sqrt{\frac{35}{6}} + \sqrt{\frac{1}{5}} \cdot \sqrt{\frac{16}{5}} = \sqrt{\frac{\cancel{42^6}}{5}} \cdot \frac{6}{\cancel{35^5}} + \sqrt{\frac{1}{5} \cdot \frac{16}{5}}$$

$$= \sqrt{\frac{36}{25}} + \sqrt{\frac{16}{25}} = \frac{6}{5} + \frac{4}{5} = \frac{10}{5} = \boxed{2}$$

$$2) \sqrt{(-1)^2} - \left(\sqrt{3\frac{1}{5}} : \sqrt{5}\right) \cdot \left(\sqrt{4\frac{1}{6}} : \sqrt{\frac{2}{3}}\right) = 1 - \left(\sqrt{\frac{16}{5}} : \sqrt{5}\right) \cdot \left(\sqrt{\frac{25}{6}} : \sqrt{\frac{2}{3}}\right) = 1 - \left(\sqrt{\frac{16}{5} \cdot \frac{1}{5}}\right) \cdot \left(\sqrt{\frac{25}{6^2} \cdot \frac{\cancel{3^1}}{2}}\right)$$

$$= 1 - \left(\sqrt{\frac{16}{25}}\right) \cdot \left(\sqrt{\frac{25}{4}}\right) = 1 - \frac{\cancel{4^2}}{\cancel{5^1}} \cdot \frac{\cancel{5^1}}{\cancel{2^1}} = 1 - 2 = \boxed{-1}$$