

Mathematics for grad"10".First Semester.

11: 01

Use "rational" or "Irrational" in your answer.

$$1) \frac{3.78}{100} \quad (\text{ Rational }) \quad \frac{378}{10000} = 0.0378$$

$$2) 3.33^{\circ} \quad (\text{ Rational }) \quad \text{لأن العدد الدوري هو عدد نسبي}$$

$$3) \frac{7\pi}{22} \quad (\text{ Irrational }) \quad \text{لأن } \pi \text{ هو عدد غير نسبي}$$

$$4) (8 - \sqrt{3})^2 \quad (\text{ Irrational }) \quad (8 - \sqrt{3})^2 = 64 - 16\sqrt{3} + 3 = 67 - 16\sqrt{3}$$

$$5) \left(\frac{\sqrt{10}}{5}\right)^2 \quad (\text{ Rational }) \quad \left(\frac{\sqrt{10}}{5}\right)^2 = \frac{(\sqrt{10})^2}{5^2} = \frac{10}{25}$$

$$6) (7\pi)^4 \quad (\text{ Irrational }) \quad \text{لأن } \pi \text{ هو عدد غير نسبي}$$

$$7) \left(\frac{3\sqrt{5}}{5}\right)^2 \quad (\text{ Rational }) \quad \left(\frac{3\sqrt{5}}{5}\right)^2 = \frac{(3\sqrt{5})^2}{(5)^2} = \frac{9 \times 5}{5 \times 5} = \frac{9}{5}$$

$$\text{or } \left(\frac{3\sqrt{5}}{5}\right)^2 = \left(\frac{3}{\sqrt{5}}\right)^2 = \frac{3^2}{(\sqrt{5})^2} = \frac{9}{5}$$

$$8) \frac{\sqrt{19}}{\sqrt{4}} \quad (\text{ Irrational }) \quad \frac{\sqrt{19}}{\sqrt{4}} = \frac{\sqrt{19}}{2}$$

11: 02

Give the simplest answer for:

$$1) \sqrt{\frac{72}{2}} = \sqrt{\frac{72}{2}} = \sqrt{36} = 6$$

$$2) \sqrt{\frac{121}{36}} = \sqrt{\frac{121}{36}} = \frac{\sqrt{121}}{\sqrt{36}} = \frac{11}{6}$$

$$3) \frac{\sqrt{40}}{\sqrt{250}} = \frac{\sqrt{40}}{\sqrt{250}} = \frac{\sqrt{10 \times 4}}{\sqrt{10 \times 25}} = \frac{\sqrt{10} \times \sqrt{4}}{\sqrt{10} \times \sqrt{25}} = \frac{\sqrt{4}}{\sqrt{25}} = \frac{2}{5}$$

$$4) (3\sqrt{x-4})^2 = (3\sqrt{x-4})^2 = (3)^2(\sqrt{x-4})^2 = 9(x-4) = 9x - 36$$

$$5) \left(\frac{x}{\sqrt{x}}\right)^2 = \left(\frac{x}{\sqrt{x}}\right)^2 = \frac{(x)^2}{(\sqrt{x})^2} = \frac{x^2}{x} = x \quad \text{or} \quad \left(\frac{x}{\sqrt{x}}\right)^2 = (\sqrt{x})^2 = x$$

$$6) \left(\sqrt{\frac{\sqrt{x^4 y^4}}{\sqrt{16 y^2}}} \times \frac{4}{y}\right)^2 = \left(\sqrt{\frac{\sqrt{x^4 y^4}}{\sqrt{16 y^2}}} \times \frac{4}{y}\right)^2 = \left(\sqrt{\frac{\sqrt{x^4} \times \sqrt{y^4}}{\sqrt{16} \times \sqrt{y^2}}} \times \frac{4}{y}\right)^2 = \left(\sqrt{\frac{x^2 y^2}{4 y}} \times \frac{4}{y}\right)^2$$

$$\left(\frac{\sqrt{x^2 y^2}}{\sqrt{4 y}} \times \frac{4}{y}\right)^2 = \left(\frac{\sqrt{x^2} \times \sqrt{y^2}}{\sqrt{4} \times \sqrt{y}} \times \frac{4}{y}\right)^2 = \left(\frac{x \cancel{y}}{2 \sqrt{y}} \times \frac{\cancel{4}}{y}\right)^2 = \left(\frac{2x}{\sqrt{y}}\right)^2 = \frac{(2x)^2}{(\sqrt{y})^2} = \frac{4x^2}{y}$$

11:03

Find the basic numeral in each case:

$$1) \left(\frac{\sqrt{160}}{16} \times \sqrt{2}\right) - \sqrt{500} + \frac{\sqrt{35}}{\sqrt{5}} = \left(\frac{\sqrt{10 \times 16}}{16} \times \sqrt{2}\right) - (\sqrt{25} \times \sqrt{20}) + \sqrt{\frac{35}{5}} =$$

$$\left(\frac{4\sqrt{10}}{16} \times \sqrt{2}\right) - (5\sqrt{20}) + \sqrt{7} = \left(\frac{\sqrt{10 \times 2}}{4}\right) - (5\sqrt{20}) + \sqrt{7} = \frac{1}{4}\sqrt{20} - 5\sqrt{20} + \sqrt{7} = \frac{-19}{4}\sqrt{20} + \sqrt{7}$$

$$2) \frac{10\sqrt{2}}{2} + 6\sqrt{18} + \sqrt{12.5} = 5\sqrt{2} + 6\sqrt{9 \times 2} + \sqrt{12\frac{1}{2}} = 5\sqrt{2} + (6\sqrt{9} \times \sqrt{2}) +$$

$$\sqrt{\frac{25}{2}} = 5\sqrt{2} + 18\sqrt{2} + \frac{\sqrt{25}}{\sqrt{2}} = 23\sqrt{2} + \frac{5}{\sqrt{2}}$$

$$3) \frac{7}{\sqrt{2}} - \sqrt{\frac{36}{2}} + \left(\sqrt{\frac{5\sqrt{2}}{2}}\right)^2 = \frac{7}{\sqrt{2}} - \frac{\sqrt{36}}{\sqrt{2}} + \frac{5\sqrt{2}}{2} = \frac{7}{\sqrt{2}} - \frac{6}{\sqrt{2}} + \frac{5}{\sqrt{2}} = \frac{7-6+5}{\sqrt{2}} = \frac{6}{\sqrt{2}}$$

$$4) \sqrt{75} + \sqrt{27} - \sqrt{12} = (\sqrt{25 \times 3}) + (\sqrt{9 \times 3}) - (\sqrt{4 \times 3}) = (\sqrt{25} \times \sqrt{3}) +$$

$$(\sqrt{9} \times \sqrt{3}) - (\sqrt{4} \times \sqrt{3}) = 5\sqrt{3} + 3\sqrt{3} - 2\sqrt{3} = 6\sqrt{3}$$

$$5) \sqrt{8} - \sqrt{32} + \frac{14\sqrt{9}}{\sqrt{49}} = \sqrt{8} - \sqrt{8 \times 4} + \frac{14\sqrt{9}}{7} = \sqrt{8} - (\sqrt{8} \times \sqrt{4}) + 2\sqrt{9} = \sqrt{8} -$$

$$2\sqrt{8} + 2\sqrt{9} = -\sqrt{8} + 2\sqrt{9}$$