

Q1. Classify the following numbers as rational or irrational :

- (i) $\sqrt{2}$ (ii) $\sqrt{3}$ (iii) $\sqrt{4}$ (iv) $\sqrt{5}$ (v) $\sqrt{6}$ (vi) $\sqrt{7}$ (vii) $\sqrt{9}$ (viii) $\sqrt{11}$ (ix) $\sqrt{13}$ (x) $\sqrt{16}$
(xi) $\sqrt{17}$ (xii) $\sqrt{18}$ (xiii) $\sqrt{19}$ (xiv) $\sqrt{23}$ (xv) $\sqrt{25}$ (xvi) $\sqrt{29}$ (xvii) $\sqrt{36}$ (xviii) $\sqrt{121}$
(xix) $\sqrt{144}$ (xx) $\sqrt{169}$ (xxi) $\sqrt{196}$ (xxii) $\sqrt{225}$ (xxiii) $\sqrt{256}$ (xxiv) $\sqrt{289}$ (xxv) $\sqrt{361}$

Q2. Classify the following numbers as rational or irrational :

- (i) 0.625 (ii) $0.333 \dots$ (iii) 0.3796 (iv) $7.478478 \dots$ (v) $1.101001000100001 \dots$ (vi) 2.3574
(vii) 1.6 (viii) $0.750750075000 \dots$ (ix) $0.35242424 \dots$ (x) $0.21211211121111 \dots$ (xi) $2.4777 \dots$
(xii) $0.\overline{142857}$ (xiii) $0.4\overline{7}$ (xiv) 15.75 (xv) $0.520200200020000 \dots$ (xvi) π

Q3. Simplify and classify the following numbers as rational or irrational :

- (i) $\sqrt{6} + (-\sqrt{6})$ (ii) $\sqrt{2} + (-\sqrt{2})$ (iii) $3\sqrt{2} + 5\sqrt{2}$ (iv) $7\sqrt{3} + 2\sqrt{3}$ (v) $2 - \sqrt{5}$ (vi) $11\sqrt{7} - 6\sqrt{7}$
(vii) $7\sqrt{5} - 3\sqrt{2}$ (viii) $\pi - 2$ (ix) $\pi + 40$ (x) 3π (xi) $\frac{\pi}{5}$ (xii) $\sqrt{3} \cdot \sqrt{3}$ (xiii) $\sqrt{7} \cdot \sqrt{7}$
(xiv) $\frac{\sqrt{17}}{\sqrt{17}}$ (xv) $2\sqrt{3} \cdot 4\sqrt{3}$ (xvi) $7\sqrt{5} \cdot 3\sqrt{5}$ (xvii) $3\sqrt{8} \cdot 4\sqrt{2}$ (xviii) $5\sqrt{9} \cdot 2\sqrt{4}$ (xix) $2\sqrt{7} \cdot 3\sqrt{5}$
(xx) $\frac{\sqrt{5}}{\sqrt{5}}$ (xxi) $\frac{14\sqrt{18}}{7\sqrt{6}}$ (xxii) $\frac{2\sqrt{7}}{7\sqrt{7}}$ (xxiii) $\frac{1}{\sqrt{2}}$ (xxiv) $\frac{5}{\sqrt{3}}$ (xxv) $\frac{1}{\sqrt{7}}$

Q4. Simplify :

- (i) $\frac{6}{2\sqrt{3}}$ (ii) $\frac{11}{2\sqrt{5}}$ (iii) $(3 + \sqrt{3})(3 - \sqrt{3})$ (iv) $(2 + \sqrt{2})(2 - \sqrt{2})$ (v) $(5 + \sqrt{5})(5 - \sqrt{5})$ (vi) $(2 + \sqrt{2})^2$
(vii) $(\sqrt{2} + \sqrt{3})^2$ (viii) $(2 + \sqrt{3})^2$ (ix) $(7 - \sqrt{2})^2$ (x) $(\sqrt{5} - \sqrt{2})^2$ (xi) $(3 + 2\sqrt{2})(3 - 2\sqrt{2})$
(xii) $(7 + 3\sqrt{2})(7 - 3\sqrt{2})$ (xiii) $(3 + \sqrt{3})(2 + \sqrt{2})$ (xiv) $(5 + \sqrt{7})(2 + \sqrt{5})$

