

1. State whether the following are **Rational** or **Irrational** and **why** (1 mark each)

a. $\sqrt{144}$

b. $\sqrt[3]{7}$

c. $\sqrt[3]{125}$

d. $-\frac{2}{5}$

e. $0.\overline{15}$

f. $\sqrt{8}$

2. Express each Radical in Simplest Form. (1 mark each)

a. $\sqrt{12}$

b. $2\sqrt{45}$

c. $\sqrt{200xy^2}$

3. Write as a radical and evaluate.

a. $25^{0.5}$

b. $16^{\frac{3}{2}}$

4. Write each Radical in Exponential Form. Do not evaluate.

a. $\sqrt[3]{4^5}$

b. $(\sqrt{3})^4$

c. $\sqrt[3]{\sqrt{x^3}}$

5. **Simplify** and **Evaluate**. Show all of your work and answers must be left with **positive exponents**

a. $(2^{-2} + 2^{-1})^2$

b. $\left(\frac{2}{3}\right)^{\frac{1}{4}} \left(\frac{2}{3}\right)^{\frac{7}{4}}$

c. $(16x^8y^{-4})^{\frac{3}{4}}$

d. $\frac{-3x^5y^{-5}}{12x^{-2}y^{-2}}$

6. Factor each trinomial.

a) $m^2 - 13m + 42$

b) $2m^2 + 10m + 8$

c) $4x^2 - 5x - 6$

d) $8x^2 + 8xy - 6y^2$

e) $27m^3 - 12m$

f) $9x^2 + 36x + 36$

g) $\frac{1x^2}{9} - 4y^2$

h) $2(2x + 1)^2 - 7(2x + 1) + 3$