

Quiz 2: Divide Radicals & Solve Radical Equations.

1. Simplify each and rationalize the denominator (5 marks).

a) $\frac{12\sqrt{6}}{2\sqrt{3}} = 6\sqrt{2}$

OR $\frac{12\sqrt{6} \cdot \sqrt{3}}{2\sqrt{3} \cdot \sqrt{3}} = \frac{12\sqrt{18}}{2\sqrt{9}} = \frac{12\sqrt{9}\sqrt{2}}{2(3)}$
 $= \frac{12(3)\sqrt{2}}{6} = \frac{36\sqrt{2}}{6} = 6\sqrt{2}$

b) $\frac{\sqrt{15}}{\sqrt{6}} = \frac{\sqrt{5}}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{10}}{\sqrt{4}} = \frac{\sqrt{10}}{2}$

c) $\frac{3\sqrt{12}}{2\sqrt{5}} \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{60}}{2\sqrt{25}} = \frac{3\sqrt{4}\sqrt{15}}{2(5)}$

$$\frac{\sqrt{15}}{\sqrt{6}} \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{90}}{\sqrt{36}} = \frac{\sqrt{9}\sqrt{10}}{6}$$

$$= \frac{3(2)\sqrt{15}}{10}$$

$$= \frac{3\sqrt{10}}{6} = \frac{\sqrt{10}}{2}$$

$$= \frac{6\sqrt{15}}{10}$$

$$= \frac{3\sqrt{15}}{5}$$

2. Multiply each, always express in simplest form. (4 marks)

a) $\frac{2\sqrt{3}+4\sqrt{2}}{\sqrt{5}} \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{15} + 4\sqrt{10}}{\sqrt{25}} = \frac{2\sqrt{15} + 4\sqrt{10}}{5}$

all $\div \sqrt{3}$
 $= \frac{3\sqrt{2}+1}{2}$
b) $\frac{3\sqrt{6}+\sqrt{3}}{2\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{18} + \sqrt{9}}{2\sqrt{9}} = \frac{3\sqrt{9}\sqrt{2} + 3}{2(3)}$
 $= \frac{3(3)\sqrt{2} + 3}{6}$
 $= \frac{9\sqrt{2} + 3}{6}$
 $= \frac{3\sqrt{2} + 1}{2}$

3. Solve. State the restrictions on x . (5⁶ marks)

a) $2\sqrt{x} = 6$

$$\sqrt{x} = 3$$

$$x \geq 0$$

$$x = 9$$

b) $\sqrt{x-4} = 5$

$$x-4 = 25$$

$$x-4 \geq 0$$

$$x = 29$$

$$x \geq 4$$

c) $2\sqrt{x+3} - 5 = 7$

$$2\sqrt{x+3} = 12$$

$$x+3 \geq 0$$

$$\sqrt{x+3} = 6$$

$$x \geq -3$$

$$x+3 = 36$$

$$x = 33$$