

Practice Test 4  
Radicals

Math 100

$$1) \sqrt[3]{x^2} = \boxed{x^{2/3}}$$

$$2) 7^{3/4} = \boxed{\sqrt[4]{7^3}}$$

$$3) \sqrt[3]{64x^2y^{10}} = \boxed{4y^3\sqrt[3]{x^2y}}$$

$$4) \sqrt{45z^3} + z\sqrt{80z}$$

$$\sqrt{9 \cdot 5z^3} + z\sqrt{16 \cdot 5z}$$

$$3z\sqrt{5z} + 4z\sqrt{5z}$$

$$\boxed{7z\sqrt{5z}}$$

$$5) \sqrt{8}(\sqrt{2} - \sqrt{3x})$$

$$\sqrt{8} \cdot \sqrt{2} - \sqrt{8} \cdot \sqrt{3x}$$

$$\sqrt{16} - \sqrt{24x}$$

$$4 - 2\sqrt{6x}$$

OR

$$\boxed{2(2 - \sqrt{6x})}$$

$$6) \sqrt[3]{27x^5y^2} + 2\sqrt[3]{x^2y^2} - 3x\sqrt[3]{64x^4y^5}$$

$$3x\sqrt[3]{x^2y^2} + 2\sqrt[3]{x^2y^2} - 12xy\sqrt[3]{x^2y^2}$$

$$\boxed{(3x+2-12xy)\sqrt[3]{x^2y^2}}$$

$$7) (2\sqrt{5} + 3)(2\sqrt{5} - 2)$$

$$2 \cdot 2\sqrt{5} + 6\sqrt{5} - 4\sqrt{5} - 6$$

$$4 \cdot 5 + 2\sqrt{5} - 6$$

$$20 + 2\sqrt{5} - 6$$

$$\boxed{14 + 2\sqrt{5}}$$

$$8) (4\sqrt{x} + \sqrt{7})^2$$

$$(4\sqrt{x})^2 + 2(4\sqrt{x})(\sqrt{7}) + \sqrt{7}^2$$

$$\boxed{16x + 8\sqrt{7x} + 7}$$

$$9) \sqrt{\frac{32x^3y}{2x^5y^3}} = \frac{\sqrt{32x^3y}}{\sqrt{16 \cdot 2x^5y^3}}$$

$$= \frac{4x\sqrt{2xy}}{x^2y\sqrt{2xy}} = \boxed{\frac{4}{xy}}$$

## Practice Test on Radicals

$$10) \left( \frac{\sqrt{b}}{\sqrt{b}-\sqrt{a}} \right) \left( \frac{\sqrt{b}+\sqrt{a}}{\sqrt{b}+\sqrt{a}} \right) = \frac{b+\sqrt{ab}}{b-a}$$

$$\begin{aligned} 11) (\sqrt{-8})(\sqrt{-2}) &= \sqrt{-4 \cdot 2} \cdot \sqrt{-2} \\ &= 2i\sqrt{2} \cdot i\sqrt{2} \\ &= 2i^2\sqrt{4} = \boxed{-4} \end{aligned}$$

$$12) (5-2i) - (8-4i)$$

$$(5-2i) + (-8+4i)$$

$$\boxed{-3+2i}$$

$$13) (2+5i)(4-2i)$$

$$8-4i+20i-10i^2$$

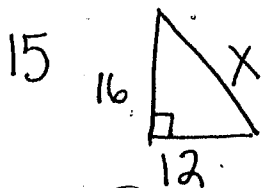
$$8+16i+10$$

$$18+16i$$

$$\text{or } \boxed{2(9+8i)}$$

$$14) \left( \frac{2+3i}{1-2i} \right) \left( \frac{1+2i}{1+2i} \right) = \frac{2+7i+6i^2}{1-4i^2}$$

$$= \boxed{\frac{-4+7i}{5}}$$



Pythagorean theorem

$$16^2 + 12^2 = x^2$$

$$256 + 144 = x^2$$

$$400 = x^2$$

$$\sqrt{400} = x$$

$$\sqrt{20 \cdot 20} = x$$

20 = x

16)  $\sqrt[3]{2x-2} + 4 = 2$

$$\sqrt[3]{2x-2} = -2$$

$$(\sqrt[3]{2x-2})^3 = (-2)^3$$

$$2x - 2 = -8$$

$$2x + 6 = 0$$

$$2(x + 3) = 0$$

x = -3

used Root Properties

17)  $(r-2)^2 + 28 = 0$

$$(r-2)^2 = -28$$

$$\sqrt{(r-2)^2} = \pm \sqrt{-28}$$

$$r-2 = \pm \sqrt{-4 \cdot 7}$$

$$r-2 = \pm 2i\sqrt{7}$$

r = 2 ± 2i√7  
= 2 ± 2√7i

18)  $t^2 - t - 7 = 0$

used Quadratic Formula

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{1 \pm \sqrt{1 - 4(1)(-7)}}{2(1)} = \frac{1 \pm \sqrt{29}}{2}$$

19)  $x^2 + 13 = 2x$   
 $x^2 - 2x + 13 = 0$

used Quadratic Formula

$$\frac{2 \pm \sqrt{4 - 4(1)(13)}}{2} = \frac{2 \pm \sqrt{-48}}{2} = \frac{2 \pm 4i\sqrt{3}}{2} = 1 \pm 2i\sqrt{3}$$

1 ± 2√3i

## Practice Test on Radicals

$$20) \text{ speed} = 192 \text{ ft/s}$$

$$v = \sqrt{64d}$$

$$(192)^2 = (\sqrt{64d})^2$$

$$\frac{36864}{64} = \frac{64d}{64}$$

$$\textcircled{576 \text{ ft}} = d$$