

ALGEBRA 2

Quiz 7.1, 7.2, Review

NAME: _____

DATE: _____

PER. _____

Simplify:

$$\textcircled{1} \quad 3^{\frac{1}{2}} \cdot 3^{\frac{2}{3}}$$

$$= 3^{\frac{3}{6}} \cdot 3^{\frac{4}{6}} = 3^{\frac{7}{6}}$$

$$\textcircled{2} \quad (5^{\frac{2}{3}})^{\frac{1}{2}}$$

$$= 5^{\frac{2}{6}} = 5^{\frac{1}{3}}$$

$$\textcircled{3} \quad \frac{4}{4^{\frac{1}{2}}} = 4^{\frac{2}{2} - \frac{1}{2}}$$

$$= 4^{\frac{1}{2}}$$

$$= 2$$

$$\textcircled{4} \quad \frac{4x^4y^0}{3xy} \cdot \frac{6x^{-2}y^{-4}}{(2xy)^2}$$

$$= \frac{24x^2y^{-4}}{12x^3y^3} = \frac{2}{xy^7}$$

$$\textcircled{5} \quad \frac{x^6}{2x^{-2}} \cdot \frac{10^5}{x^7}$$

$$= \frac{5x^6}{x^5} = 5x$$

$$\textcircled{6} \quad \sqrt[3]{a^6b^3c^8}$$

$$= a^2b^1c^{\frac{2}{3}} = a^2bc^{\frac{2}{3}}$$

$$\textcircled{7} \quad \sqrt[4]{x^6y^3z^8}$$

$$= x^{\frac{3}{2}}y^{\frac{3}{4}}z^2 = x^{\frac{3}{2}}y^{\frac{3}{4}}z^2$$

$$\textcircled{8} \quad (16^{\frac{1}{4}})^3$$

$$= 16^{\frac{3}{4}} = 2^3 = 8$$

$$\textcircled{9} \quad \left(\frac{125}{64}\right)^{-\frac{2}{3}}$$

$$= \left(\frac{64}{125}\right)^{\frac{2}{3}} = \left(\frac{4}{5}\right)^2 = \frac{16}{25}$$

$$\textcircled{10} \quad 64^{-\frac{1}{2}}$$

$$= \frac{1}{64^{\frac{1}{2}}} = \frac{1}{8}$$

$$\textcircled{11} \quad \frac{\sqrt[3]{24}}{\sqrt[3]{3}} = \sqrt[3]{8} = 2$$

$$\textcircled{12} \quad (\sqrt[4]{4} \cdot \sqrt{4})^4$$

$$= (4^{\frac{1}{4}} \cdot 4)^4$$

$$= 4 \cdot 4^4 = 4^5 = 1024$$

$$\textcircled{13} \quad (81^{\frac{1}{4}} + 27^{\frac{1}{3}})^2$$

$$= (3 + 3)^2$$

$$= 6^2 = 36$$

$$\textcircled{14} \quad \sqrt[4]{\left(\frac{49}{144}\right)^{-2}}$$

$$= \left(\frac{49}{144}\right)^{-\frac{2}{4}} = \left(\frac{144}{49}\right)^{\frac{1}{2}}$$

$$= \frac{12}{7}$$

$$(15) \quad \sqrt{2} + 3\sqrt{2}$$

$$= 4\sqrt{2}$$

$$(16) \quad \sqrt{3} + \sqrt{27}$$

$\hat{9 \cdot 3}$

$$= \sqrt{3} + 3\sqrt{3}$$
$$= 4\sqrt{3}$$

$$(17) \quad \sqrt[4]{243} + \sqrt[4]{3}$$

$\hat{3 \cdot 81}$
 $\hat{3 \cdot 3 \cdot 3 \cdot 3}$

$$= 3\sqrt[4]{3} + \sqrt[4]{3}$$
$$= 4\sqrt[4]{3}$$

BONUS

$$(18) \quad (\sqrt[4]{16} + \sqrt[3]{27})^2$$

$$= (2 + 3)^2$$
$$= 5^2 = 25$$

$$(19) \quad \sqrt[3]{\sqrt{3}}$$
$$= (3^{1/2})^{1/3}$$
$$= 3^{1/6}$$

$$(20) \quad \sqrt[4]{9} \cdot \sqrt{3}$$

$\hat{3^2}$ $\hat{3}$

$$= (3^{2/4}) \cdot 3^{1/2}$$

$$= 3^{1/2} \cdot 3^{1/2} = 3$$

(21) YOU CONDUCT AN EXPERIMENT ON BACTERIA GROWTH, AND FIND YOU CAN MODEL THE RATE BY THE EQUATION

$$g(t) = 16t^{1/3} \quad \text{where } t \text{ represents time elapsed in } \overset{\text{hrs}}{\text{secs}}$$

(a) FIND THE AMOUNT OF BACTERIA WHEN $\overset{125}{8}$ HRS HAVE PASSED

$$g(t) = 16(125)^{1/3} = 16(5) = 80$$

(b) FIND THE TIME ELAPSED IF THE AMOUNT OF BACTERIA IS 32

$$\frac{32}{16} = \frac{16t^{1/3}}{16}$$

$$(2)^3 = (t^{1/3})^3$$

$$t = 8 \text{ hrs}$$