

Review for Unit 1 Test Part 2

Exponent Laws

① $(4x^3y^6)^3$
 $4^3 x^9 y^{18}$

$64x^9y^{18}$

② $(5x^2y^4)^3$
 $5^3 x^6 y^{12}$

$125x^6y^{12}$

③ $b^3 \cdot b^4 \cdot b \cdot b^2$
 $b^{3+4+1+2}$

b^{10}

④ $\frac{22y^6z^8}{2y^7z^{-7}}$

$11y^5z^{15}$

⑤ $\frac{xy^7}{x^3y^4}$

$x^{-2}y^3$
 $\frac{y^3}{x^2}$

⑥ $\left(\frac{3m^2n^7}{m}\right)^5$

$(3mn^7)^5$

$243m^5n^{35}$

⑦ $(2x^3y^4) \cdot (6x^5y^2)$

$12x^8y^6$

⑧

$\left(\frac{24z^{-2}x^9y^2}{12z^4x^8y^2}\right)^2$

$(2z^{-6}x^1y^0)^2$
 $4z^{-12}x^2$
 $\frac{4x^2}{z^{12}}$

Convert from radical form to rational Exponent Form
 "EOI" \Rightarrow Exponent over Index

⑨ $\sqrt{x^3}$
 $x^{\frac{3}{2}}$

⑩ $\sqrt[4]{(xy)^2}$
 $x^{\frac{2}{4}}y^{\frac{2}{4}}$
 $x^{\frac{1}{2}}y^{\frac{1}{2}}$

⑪ $\sqrt[3]{7y^4}$
 $\frac{7^{\frac{1}{3}}y^{\frac{4}{3}}}{7y}$

⑫ $\sqrt[8]{x^2}$
 $x^{\frac{2}{8}}$
 $x^{\frac{1}{4}}$

$\sqrt[n]{x^m} = x^{\frac{m}{n}}$

Solve by using square root method
(some answers will be real or complex #s)

$$(17) \quad m^2 + 7 = 6$$

$$\sqrt{m^2} = \sqrt{-1}$$

$$m = \pm i$$

$$(18) \quad x^2 - 1 = -82$$

$$\sqrt{x^2} = \sqrt{-81}$$

$$x = \pm 9i$$

$$(19) \quad \sqrt{(2k-1)^2} = \sqrt{9}$$

$$2k-1 = 3 \quad \text{and} \quad 2k-1 = -3$$

$$\frac{2k}{2} = \frac{4}{2}$$

$$\frac{2k}{2} = \frac{-2}{2}$$

$$k = 2$$

$$\text{and } k = -1$$

$$(20) \quad \frac{10(x-7)^2}{10} = \frac{440}{10}$$

$$\sqrt{(x-7)^2} = \sqrt{44}$$

$$x-7 = \pm 2\sqrt{11}$$

$$x = 7 \pm 2\sqrt{11}$$

$$(21) \quad \frac{-2(x-1)^2}{-2} = \frac{36}{-2}$$

$$\sqrt{(x-1)^2} = \sqrt{-18}$$

$$x-1 = \pm 3i\sqrt{2}$$

$$x = 1 \pm 3i\sqrt{2}$$

$$(22) \quad \frac{3x^2 + 40}{+x^2} = \frac{-x^2 - 56}{+x^2}$$

$$\frac{4x^2 + 40}{-40} = \frac{-56}{-40}$$

$$\frac{4x^2}{4} = \frac{-96}{4}$$

$$\sqrt{x^2} = \sqrt{-24}$$

$$x = \pm 2i\sqrt{6}$$

Simplify the radical

$$(23) \quad \sqrt{-1} = i$$

$$(24) \quad \sqrt{-72} = \pm 6i\sqrt{2}$$

$$(25) \quad \sqrt{-200} = \pm 10i\sqrt{2}$$

$$(26) \quad \sqrt{-48} = 4i\sqrt{3}$$

Solve by using Quadratic Formula (some may be real / ~~real~~ complex answers)

13) $0 = 5x^2 - 10x + 30$

$$\frac{-(-10) \pm \sqrt{(-10)^2 - 4(5)(30)}}{2(5)}$$

$$= \frac{10 \pm \sqrt{-500}}{10}$$

$$= \frac{10 \pm 10i\sqrt{5}}{10}$$

$$= \frac{10}{10} \pm \frac{10i\sqrt{5}}{10}$$

$$= \boxed{1 \pm i\sqrt{5}}$$

14) $-3x^2 = -6x + 8$

$$-3x^2 + 6x - 8 = 0$$

$$\frac{-6 \pm \sqrt{6^2 - 4(-3)(-8)}}{2(-3)}$$

$$\frac{-6 \pm \sqrt{-60}}{-6}$$

$$\frac{-6 \pm 2i\sqrt{15}}{-6}$$

$$\frac{-6}{-6} \pm \frac{2i\sqrt{15}}{-6}$$

$$\boxed{1 \pm \frac{2i\sqrt{15}}{3}}$$

15) $x^2 - 12x - 28 = 0$

$$= \frac{-(-12) \pm \sqrt{(-12)^2 - 4(1)(-28)}}{2(1)}$$

$$= \frac{12 \pm \sqrt{256}}{2}$$

$$\frac{12 \pm 16}{2}$$

$$\frac{28}{2} \text{ and } \frac{-4}{2}$$

$$\boxed{x = 14 \text{ and } -2}$$

16) $x^2 + 8x - 1 = 0$

$$\frac{-8 \pm \sqrt{(8)^2 - 4(1)(-1)}}{2(1)}$$

$$\frac{-8 \pm \sqrt{68}}{2}$$

$$\frac{-8 \pm 2i\sqrt{17}}{2}$$

$$\frac{-8}{2} \pm \frac{2i\sqrt{17}}{2}$$

$$\boxed{x = -4 \pm i\sqrt{17}}$$