Cumulative Test Review: (Packet # 1, 2, 3, & 4)

This worksheet is for practice-Answers are given at the end.

Topics to Review:

1. Solve Radical Equations (Chapter# 4)
2. Solve Radical Equations and Extraneous solutions. (Chapter# 4)
3. Simplify Rational Exponents (Chapter # 4)
4. Simplify Radical Expressions (Chapter # 4)
5. Convert Radical expressions and Rational Exponents and vice versa (Chapter # 4)
6. Rationalizing the deneminator (Chapter # 3)
7. Operations with Complex Numbers(Chapter # 2)
8. Graphing Complex Numbers and its absolute value (Chapter # 2)
9. Powers of the imaginary unit, i (Chapter # 2)

Besides your notebook, all these topics are available on your cinemath portal for you to review.

Next page you will find few questions from these topics to practice.
Answers to these questions are on the following pages.

Ms. Erayil Name: _____

CUMULATIVE TEST REVIEW: (PACKET # 1, 2, 3, & 4)

1. Simplify each Number By Using the Imaginary Unit i

a. $\sqrt{-12}$ b) $\sqrt{-36}$ c) $\frac{-1}{3}\sqrt{-63}$ d) $\sqrt{-16}$ e) $-\sqrt{-75}$

2. Plot each complex number on a coordinate plane. Also find its Absolute value

a) $-5+2i$ b) $-2-3i$ c) $-3i$ d) 7 e) i^{28} f) i^{25083}

3. Simplify and rewrite each expression using only positive exponents.

a) $\left(\frac{2^3}{27}\right)^{\frac{1}{3}}$ b) $\left(\frac{27}{27^{1/3}}\right)^{1/2}$ c) $\left(\frac{5m^2n^{-3}k^0}{2mk}\right)^{-2}$

4. Simplify each radical expression

a) $\sqrt[3]{27x^6}$ b) $\sqrt[3]{x^7}\cdot\sqrt[3]{x^2}$ c) $\sqrt[3]{-54x^9y^3}$

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5. Rationalize the denominator and simplify

a) $\sqrt[3]{\frac{x^3}{7}}$

b) $\sqrt[4]{\frac{x^8}{3}}$

c) $\sqrt[3]{\frac{x^6y}{250y^2z}}$

6. Solve and check for extraneous solutions.

a) $\sqrt{x-12} = 9$

b) $\sqrt{3x+13} + 3 = 2x$

c) $\sqrt{x+2} - x = -4$

→ Do it at the bottom of the page...

Ms. Erayil Name:

CUMULATIVE TEST REVIEW: (PACKET # 1, 2, 3, & 4)

1. Simplify each Number By Using the Imaginary Unit i

a. $\sqrt{-12} = \sqrt{-1}\cdot\sqrt{12} = i\sqrt{2^2\cdot 3} = 2i\sqrt{3}$

b) $\sqrt{-36} = \sqrt{-1}\sqrt{36} = \sqrt{-1}\sqrt{6^2} = 6i$

c) $\frac{-1}{3}\sqrt{-63} = -\frac{1}{3}\sqrt{3^2\cdot 7}\sqrt{-1} = -\frac{3}{3}i\sqrt{7} = -i\sqrt{7}$

d) $\sqrt{-16} = \sqrt{-1}\sqrt{16} = i\sqrt{4^2} = 4i$

e) $-\sqrt{-75} = -\sqrt{-1}\sqrt{75} = -i\sqrt{5^2\cdot 3} = -5i\sqrt{3}$

2. Plot each complex number on a coordinate plane. Also find its Absolute value

a) $-5+2i$ $(-5,2)$

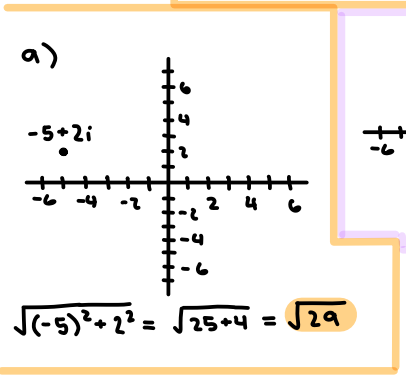
b) $-2-3i$ $(-2,-3)$

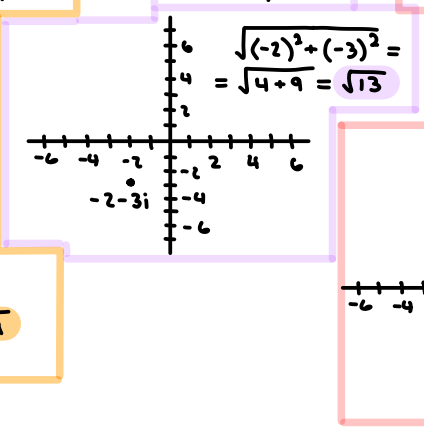
c) $-3i$ $(0,-3)$

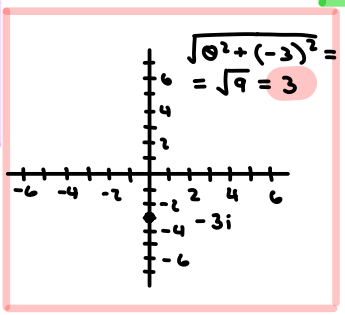
d) 7 $(7,0)$

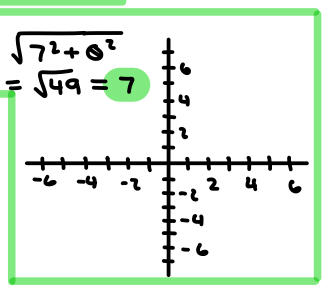
e) $i^{28} = i^0 = 1$

f) $i^{25083} = i^3 = -i$









$i^0 = 1$
$i^1 = i$
$i^2 = -1$
$i^3 = -i$

3. Simplify and rewrite each expression using only positive exponents.

a) $\left(\frac{2^3}{27}\right)^{\frac{1}{3}} = \left(\frac{2}{3^3}\right)^{1/3} = \frac{2}{3}$

b) $\left(\frac{27}{27^{1/3}}\right)^{1/2} = \left(\frac{(3^3)}{(3^3)^{1/3}}\right)^{1/2} = \frac{3^{3/2}}{3^{1/2}} = 3^{3/2-1/2} = 3^{2/2} = 3^1 = 3$

c) $\left(\frac{5m^2n^{-3}k^0}{2mk}\right)^{-2} = \frac{5^{-2}m^{2\cdot(-2)}n^{(-3)(-2)}}{2^{-2}m^{-2}k^{-2}} = \frac{2^2m^{-4}n^6}{5^2m^{-2}k^{-2}} = \frac{4m^2n^6k^2}{25m^4} = \frac{4}{25}m^{2-4}n^6k^2 = \frac{4}{25}m^{-2}n^6k^2 = \frac{4n^6k^2}{25m^2}$

4. Simplify each radical expression

a) $\sqrt[3]{27x^6} = \sqrt[3]{3^3x^3\cdot x^3} = 3x^2$

b) $\sqrt[3]{x^7}\cdot\sqrt[3]{x^2} = \sqrt[3]{x^7\cdot x^2} = \sqrt[3]{x^9} = x^3$

c) $\sqrt[3]{-54x^9y^3} = \sqrt[3]{3^3\cdot 2\cdot x^3\cdot x^3\cdot x^3\cdot y^3} = -3x^3y\sqrt[3]{2}$

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5. Rationalize the denominator and simplify

a) $\sqrt[3]{\frac{x^3}{7}} \cdot \frac{\sqrt[3]{7^2}}{\sqrt[3]{7^2}} = \sqrt[3]{\frac{49x^3}{7^3}} =$

$= \frac{x\sqrt[3]{49}}{7}$

b) $\sqrt[4]{\frac{x^8}{3}} \cdot \frac{\sqrt[4]{3^3}}{\sqrt[4]{3^3}} =$

$= \sqrt[4]{\frac{27x^8}{3^4}} = \sqrt[4]{\frac{27x^4 \cdot x^4}{3^4}} = \frac{x^2\sqrt[4]{27}}{3}$

c) $\sqrt[3]{\frac{x^6y}{250y^2z}} =$

$250 = 2 \cdot 5^3$

$= \sqrt[3]{\frac{x^3 \cdot x^3 \cdot y}{5^3 \cdot 2 \cdot y^2 \cdot z}} =$

$= \frac{x^2\sqrt[3]{y}}{5\sqrt[3]{2y^2z}} \cdot \frac{\sqrt[3]{2^2y^2z^2}}{\sqrt[3]{2^2y^2z^2}} = \frac{x^2\sqrt[3]{4y^2z^2}}{5\sqrt[3]{2^3y^3z^3}} =$

$= \frac{x^2\sqrt[3]{4y^2z^2}}{10yz}$

6. Solve and check for extraneous solutions.

a) $\sqrt{x-12} = 9$

b) $\sqrt{3x+13} + 3 = 2x$

c) $\sqrt{x+2} - x = -4$

→ Do it at the bottom of the page...

6. Solve and check for extraneous solutions.

a) $\sqrt{x-12} = 9$

b) $\sqrt{3x+13} + 3 = 2x$

c) $\sqrt{x+2} - x = -4$

6. a) $\sqrt{x-12} = 9$

$\Rightarrow (\sqrt{x-12})^2 = 9^2 \Rightarrow x - 12 = 81 \Rightarrow x = 93$ not extraneous

for 93:

$\sqrt{93-12} = 9 \Rightarrow \sqrt{81} = 9 \Rightarrow 9 = 9$ ✓

6. b) $\sqrt{3x+13} + 3 = 2x$

$\Rightarrow (\sqrt{3x+13})^2 = (2x-3)^2$

$\Rightarrow 3x+13 = (2x-3)(2x-3) \Rightarrow 3x+13 = 4x^2 - 6x - 6x + 9 \Rightarrow 0 = 4x^2 - 6x - 6x - 3x + 9 - 13 \Rightarrow$

$\Rightarrow 4x^2 - 15x - 4$

$a = 4, b = -15, c = -4$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} \Rightarrow \frac{-(-15) \pm \sqrt{(-15)^2-4(4)(-4)}}{2(4)} \Rightarrow \frac{15 \pm \sqrt{225+64}}{8} \Rightarrow \frac{15 \pm \sqrt{289}}{8} = \frac{15 \pm 17}{8}$

$\frac{15+17}{8} = \frac{32}{8} = 4$ not extraneous

$\frac{15-17}{8} = \frac{-2}{8} = -\frac{1}{4}$ extraneous

for 4:

$\sqrt{3(4)+13} + 3 = 2(4) \Rightarrow \sqrt{12+13} + 3 = 8 \Rightarrow \sqrt{25} = 5 \Rightarrow 5 = 5$ ✓

for $-\frac{1}{4}$:

$\sqrt{3(-\frac{1}{4})+13} + 3 = 8 \Rightarrow \sqrt{-\frac{3}{4}+13} = 5 \Rightarrow$ x

6c) $\sqrt{x+2} - x = -4$

$\Rightarrow (\sqrt{x+2})^2 = (x-4)^2 \Rightarrow x+2 = (x-4)(x-4) \Rightarrow x+2 = x^2 - 4x - 4x + 16 \Rightarrow x+2 = x^2 - 8x + 16 \Rightarrow$

$\Rightarrow 0 = x^2 - 8x - x + 16 - 2 \Rightarrow x^2 - 9x + 14 = 0$

$a = 1, b = -9, c = 14$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} \Rightarrow \frac{-(-9) \pm \sqrt{(-9)^2-4(1)(14)}}{2(1)} \Rightarrow \frac{9 \pm \sqrt{81-4(14)}}{2} \Rightarrow \frac{9 \pm \sqrt{81-56}}{2} \Rightarrow \frac{9 \pm \sqrt{25}}{2} \Rightarrow$

$\Rightarrow \frac{9 \pm 5}{2}$

$\frac{9+5}{2} = \frac{14}{2} = 7$ not extraneous

$\frac{9-5}{2} = \frac{4}{2} = 2$ extraneous

for 7:

$\sqrt{7+2} - 7 = -4 \Rightarrow$

$\Rightarrow \sqrt{9} - 7 = -4 \Rightarrow$

$\Rightarrow 3 - 7 = -4 \Rightarrow -4 = -4$ ✓

for 2:

$\sqrt{2+2} - 2 = -4 \Rightarrow$

$\Rightarrow \sqrt{4} - 2 = -4 \Rightarrow 2 - 2 = -4 \Rightarrow$

$\Rightarrow 0 = -4$ x