Algebra 2 Test 2022 (Radicals Part 2)

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#1 Points possible: 1. Total attempts: 0

Combine the following expressions.

$4\sqrt{10} + 3\sqrt{10} =$ $7\sqrt{10}$

#2 Points possible: 1. Total attempts: 0

Combine the following expressions.

$5\sqrt[3]{4} + 8\sqrt[3]{4} =$ $13\sqrt[3]{4}$

#3 Points possible: 1. Total attempts: 0

Combine the following expressions.

$6x\sqrt{3} - 8x\sqrt{3} + 8x\sqrt{3} =$ $6x\sqrt{3}$

#4 Points possible: 3. Total attempts: 0

Combine the following expressions.

$6\sqrt{48} - 4\sqrt{12} + 4\sqrt{108} =$ $40\sqrt{3}$

$6\sqrt{16}\sqrt{3} - 4\sqrt{4}\sqrt{3} + 4\sqrt{36}\sqrt{3}$

$24\sqrt{3} - 8\sqrt{3} + 24\sqrt{3}$

#5 Points possible: 3. Total attempts: 0

Combine the following expressions. (Assume any variables under an even root are nonnegative.)

$7\sqrt[3]{a^8b^5} + 3a^2\sqrt[3]{a^2b^5} =$ $10a^2b\sqrt[3]{a^2b^2}$

$7\sqrt[3]{a^6}\sqrt[3]{a^2}\sqrt[3]{b^3}\sqrt[3]{b^2} + 3a^2\sqrt[3]{a^2}\sqrt[3]{b^3}\sqrt[3]{b^2}$

$7a^2b\sqrt[3]{a^2b^2} + 3a^2b\sqrt[3]{a^2b^2}$

#6 Points possible: 3. Total attempts: 0

Combine the following expressions. (Assume any variables under an even root are nonnegative.)

$6x^4\sqrt{8y^6} - 4y^3\sqrt{32x^8} =$ $-4x^4y^2\sqrt{2}$

$6x^4y^3\sqrt{4}\sqrt{2} - 4x^4y^3\sqrt{16}\sqrt{2}$

$12x^4y^2\sqrt{2} - 16x^4y^3\sqrt{2}$

#7 Points possible: 2. Total attempts: 0

Combine the following expressions.

$8\sqrt[3]{81} - 8\sqrt[3]{24} =$ $8\sqrt[3]{3}$

$8\sqrt[3]{27}\sqrt[3]{3} - 8\sqrt[3]{8}\sqrt[3]{3}$

$24\sqrt[3]{3} - 16\sqrt[3]{3}$

#8 Points possible: 2. Total attempts: 0

Multiply:

$\sqrt{30} \cdot \sqrt{6} =$ OR $\sqrt{180} = \sqrt{36}\sqrt{5} = 6\sqrt{5}$

$\sqrt{6} \cdot \sqrt{5} \cdot \sqrt{6} = 6\sqrt{5}$

#9 Points possible: 2. Total attempts: 0

Multiply:

$(6\sqrt[3]{5})(4\sqrt[3]{25}) = 24\sqrt[3]{125} = 24(5) = 120$

#10 Points possible: 2. Total attempts: 0

Multiply:

$\sqrt{2}(\sqrt{7} + 2\sqrt{2}) = \sqrt{14} + 2\sqrt{4} = \sqrt{14} + 4$

#11 Points possible: 3. Total attempts: 0

Multiply:

$(\sqrt{5} + \sqrt{7})(4\sqrt{5} - 2\sqrt{7}) = 4\sqrt{25} - 2\sqrt{35} + 4\sqrt{35} - 2\sqrt{49} = 20 + 2\sqrt{35} - 14$

$6 + 2\sqrt{35}$

#12 Points possible: 3. Total attempts: 0

Multiply (Assume all expressions appearing under a square root symbol represent nonnegative numbers):

$(\sqrt{x} - 1)(\sqrt{x} + 4) = \sqrt{x^2} + 4\sqrt{x} - 1\sqrt{x} - 4 = x + 3\sqrt{x} - 4$

#13 Points possible: 3. Total attempts: 0

Multiply:

$(\sqrt{3} - 2)^2 = (\sqrt{3} - 2)(\sqrt{3} - 2) = \sqrt{9} - 2\sqrt{3} - 2\sqrt{3} + 4 = 7 - 4\sqrt{3}$

#14 Points possible: 3. Total attempts: 0

Multiply (Assume all expressions appearing under a square root symbol represent nonnegative numbers):

$(\sqrt{x} + \sqrt{7})(\sqrt{x} - \sqrt{7}) = \sqrt{x^2} - \sqrt{7x} + \sqrt{7x} - \sqrt{49} = x - 7$

#15 Points possible: 3. Total attempts: 0

Rationalize the denominator in the following:

$\dfrac{\sqrt{10}}{\sqrt{3} + \sqrt{10}} =$

$\dfrac{\sqrt{10}(\sqrt{3} - \sqrt{10})}{(\sqrt{3} + \sqrt{10})(\sqrt{3} - \sqrt{10})} = \dfrac{\sqrt{30} - \sqrt{100}}{3 - 10} = \dfrac{\sqrt{30} - 10}{-7}$

$\dfrac{\sqrt{30} - 10}{-7}$

#16 Points possible: 3. Total attempts: 0

Rationalize the denominator in the following:

$$\frac{\sqrt{7}+4}{\sqrt{7}-4} = \underline{\quad 23+8\sqrt{7}/3 \quad}$$

$$\frac{(\sqrt{7}+4)(\sqrt{7}+4)}{(\sqrt{7}-4)(\sqrt{7}+4)} = \frac{\sqrt{49}+4\sqrt{7}+4\sqrt{7}+16}{7-4}$$

$$= \frac{7+8\sqrt{7}+16}{3}$$

#17 Points possible: 3. Total attempts: 0

Solve for a in $\sqrt{2a+6}+4=8$.

$a =$ 5

$\sqrt{2a+6} = 4$

$2a+6 = 16$

$2a = 10$

#18 Points possible: 3. Total attempts: 0

Solve for x in $\sqrt[4]{2x+4}=2$.

$x =$ 6

$2x+4 = 2^4$

$2x = 12$

#19 Points possible: 4. Total attempts: 0

Solve for a in $\sqrt{a+5}=a+5$.

$a =$ -5, -4

$a+5 = a^2+5a+5a+25$

$a+5 = a^2+10a+25$

$0 = a^2+9a+20$ $(a+5)(a+4)$

$a=-5$ $a=-4$

#20 Points possible: 5. Total attempts: 0

The following equation will require that you square both sides twice before all the radicals are eliminated. Solve the equation using the methods shown in the examples in the book.

$$\sqrt{y+10} = \sqrt{y+1}+1$$

$y =$ 15

$y+10 = (\sqrt{y+1}+1)(\sqrt{y+1}+1)$

$y+10 = y+1+\sqrt{y+1}+\sqrt{y+1}+1$

$y+10 = y+2+2\sqrt{y+1}$

$8 = 2\sqrt{y+1}$ $\quad 16 = y+1$

$4 = \sqrt{y+1}$