

## Algebra 2 Test 2022 (Radicals Part 2) - PRACTICE TEST #2

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#1 Points possible: 1. Total attempts: 0

Combine the following expressions.

$$3\sqrt{2} + 6\sqrt{2} = 9\sqrt{2}$$

#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.

$$7y\sqrt{3} - 8y\sqrt{3} + 8y\sqrt{3} = 7y\sqrt{3}$$

#4 Points possible: 3. Total attempts: 0

Combine the following expressions.

$$4\sqrt{12} - 6\sqrt{108} + 2\sqrt{108} = -16\sqrt{3}$$

$$4\sqrt{4}\sqrt{3} - 6\sqrt{36}\sqrt{3} + 2\sqrt{36}\sqrt{3}$$

$$8\sqrt{3} - 36\sqrt{3} + 12\sqrt{3}$$

#5 Points possible: 3. Total attempts: 0

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

$$3\sqrt[3]{a^5b^6} + 5a\sqrt[3]{a^2b^6} = 8ab^2\sqrt[3]{a^2}$$

$$3b^2\sqrt[3]{a^3b^2} + 5ab^2\sqrt[3]{a^2}$$

$$3ab^2\sqrt[3]{a^2} + 5ab^2\sqrt[3]{a^2}$$

#6 Points possible: 3. Total attempts: 0

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

$$4x\sqrt{24xy^8} - 2y^4\sqrt{24x^3} = 4xy^4\sqrt{6x}$$

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

$$8xy^4\sqrt{6x} - 4xy^4\sqrt{6x}$$

#7 Points possible: 2. Total attempts: 0

Combine the following expressions.

$$7\sqrt[3]{16} - 5\sqrt[3]{16} = 2\sqrt[3]{16} = 2\sqrt[3]{8}\sqrt[3]{2} = 4\sqrt[3]{2}$$

#8 Points possible: 2. Total attempts: 0

Multiply:

$$\sqrt{14} \cdot \sqrt{7} = \sqrt{98} = \sqrt{49 \cdot 2} = 7\sqrt{2}$$

#9 Points possible: 2. Total attempts: 0

Multiply:

$$(4\sqrt[3]{7})(5\sqrt[3]{49}) = 20\sqrt[3]{343} = 20(7) = 140$$

#10 Points possible: 2. Total attempts: 0

Multiply:

$$\sqrt{2}(\sqrt{5} + 4\sqrt{2}) = \sqrt{10} + 4\sqrt{4} = \sqrt{10} + 8$$

#11 Points possible: 3. Total attempts: 0

Multiply:

$$(\sqrt{5} + \sqrt{3})(2\sqrt{5} - 3\sqrt{3}) = 2\sqrt{25} - 3\sqrt{15} + 2\sqrt{15} - 3\sqrt{9} = 10 - \sqrt{15} - 9 = 1 - \sqrt{15}$$

#12 Points possible: 3. Total attempts: 0

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

$$(\sqrt{x} + 3)(\sqrt{x} + 2) = x + 2\sqrt{x} + 3\sqrt{x} + 6 = x + 5\sqrt{x} + 6$$

#13 Points possible: 3. Total attempts: 0

Multiply:

$$(\sqrt{5} - 3)^2 = (\sqrt{5} - 3)(\sqrt{5} - 3) = \sqrt{25} - 3\sqrt{5} - 3\sqrt{5} + 9 = 5 - 6\sqrt{5} + 9 = 14 - 6\sqrt{5}$$

#14 Points possible: 3. Total attempts: 0

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

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

#15 Points possible: 3. Total attempts: 0

Rationalize the denominator in the following:

$$\frac{\sqrt{2}}{(\sqrt{3} + \sqrt{2})} = \frac{\sqrt{6} - 2\sqrt{2}}{-1}$$

$$\frac{\sqrt{2}(\sqrt{3} - 2)}{(\sqrt{3} + 2)(\sqrt{3} - 2)} = \frac{\sqrt{6} - 2\sqrt{2}}{\sqrt{9} - 2\sqrt{3} + 2\sqrt{3} - 4} = \frac{\sqrt{6} - 2\sqrt{2}}{3 - 4}$$

#16 Points possible: 3. Total attempts: 0

Rationalize the denominator in the following:

$$\frac{\sqrt{7} + 1}{\sqrt{7} - 1} =$$

$$\frac{8 + 2\sqrt{7}}{6}$$

$$\frac{(\sqrt{7} + 1)(\sqrt{7} + 1)}{(\sqrt{7} - 1)(\sqrt{7} + 1)} = \frac{\sqrt{49} + \sqrt{7} + \sqrt{7} + 1}{\sqrt{49} - \sqrt{7} + \sqrt{7} - 1} = \frac{8 + 2\sqrt{7}}{6}$$

#17 Points possible: 3. Total attempts: 0

Solve for  $x$  in  $\sqrt{3x+1} + 2 = 6$ .

$$x = 5$$

$$\sqrt{3x+1} + 2 = 6$$

$$\sqrt{3x+1} = 4$$

$$3x+1 = 16$$

$$3x+1 = 16$$

$$\begin{array}{r} -1 \quad -1 \\ 3x = 15 \end{array}$$

$$x = 5$$

#18 Points possible: 3. Total attempts: 0

Solve for  $x$  in  $\sqrt[4]{2x+6} = 2$ .

$$x = 5$$

$$\sqrt[4]{2x+6} = 2$$

$$2x+6 = 2^4$$

$$2x+6 = 16$$

$$2x = 10$$

$$x = 5$$

#19 Points possible: 4. Total attempts: 0

Solve for  $y$  in  $\sqrt{y+3} = y+3$ .

$$y = -3, -2$$

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

$$y+3 = (y+3)(y+3)$$

$$y+3 = y^2+6y+9$$

$$y^2+5y+6 = 0$$

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

$$y = -3 \quad y = -2$$

#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.

$$\sqrt{x-2} = \sqrt{x+6} - 2$$

$$x = 3$$

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

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

$$-2 = 10 - 4\sqrt{x+6}$$

$$\begin{array}{r} -12 = -4\sqrt{x+6} \\ \hline -4 \quad \quad -4 \end{array}$$

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

$$9 = x+6$$

$$3 = x$$