## Algebra 2 Test 2022 (Radicals Part 2)

Name: John Sidanycz

#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.

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

#5 Points possible: 3. Total attempts: 0

Combine the following expressions. (Assume any variables under an even root/are nonnegative.)  $7\sqrt[3]{a^2}\sqrt[3]{b^2}\sqrt[3]{b^2}+3\sqrt[2]{3}\sqrt[3]{b^2}$ 

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

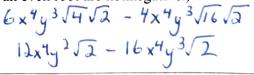
$$7 \sqrt[3a^{2}]{5^{3}}\sqrt{5^{2}} + 3a^{2}\sqrt[3]{a^{2}}\sqrt{5^{3}}\sqrt{5}$$

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

#6 Points possible: 3. Total attempts: 0

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

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



#7 Points possible: 2. Total attempts: 0

Combine the following expressions.

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

#8 Points possible: 2. Total attempts: 0

#9 Points possible: 2. Total attempts: 0

Multiply:

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

#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:

$$(\sqrt{5} + \sqrt{7})(4\sqrt{5} - 2\sqrt{7}) = 4\sqrt{5} - 2\sqrt{5} + 4\sqrt{3}5 - 2\sqrt{49} = 20 + 2\sqrt{3}5 - 14$$

#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:

$$(\sqrt{3}-2)^2 = (\sqrt{3}-1)(\sqrt{3}-1) = 3\sqrt{9} - 2\sqrt{3} - 2\sqrt{3} + 4 = 7-4\sqrt{3}$$

#14 Points possible: 3. Total attempts: 0

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

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

#15 Points possible: 3. Total attempts: 0

Rationalize the denominator in the following:

$$\frac{\sqrt{10}}{\sqrt{3}+\sqrt{10}} = \frac{\sqrt{30}-10}{-7}$$

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

#16 Points possible: 3. Total attempts: 0

Rationalize the denominator in the following:

$$\frac{\sqrt{7}+4}{\sqrt{7}-4}=\frac{23+87/3}{3}$$

$$\frac{(\sqrt{7}+4)(\sqrt{7}+4)}{(\sqrt{7}-4)(\sqrt{7}+4)} = \frac{\sqrt{49} + \sqrt{9} + \sqrt{16}}{7-4}$$

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

#17 Points possible: 3. Total attempts: 0

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

$$a = 5$$

#18 Points possible: 3. Total attempts: 0

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

$$x =$$
  $\bigcirc$ 

$$2x+4=2^{4}$$
  
 $2x=12$ 

#19 Points possible: 4. Total attempts: 0

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

$$a+5 = a^{2} + 5a + 5a + 15$$
  
 $a+5 = a^{2} + 10a + 25$  (ats)(a+4)  
 $0 = a^{2} + 9a + 20$   $a=-5$   $a=-4$ 

#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.

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

$$y = 15$$

$$y+10 = (y+1 + 1)(y+1 + 1)$$
 $y+10 = y+1 + \sqrt{y+1} + \sqrt{y+1} + 1$ 
 $y+0 = y+1 + 2\sqrt{y+1}$ 
 $8 = 2\sqrt{y+1}$ 
 $16 = y+1$ 
 $4 = \sqrt{y+1}$