Power Theorems

Total points = 47

1.
$$(3x)(2x) = (8)(3)$$
 \checkmark

$$\frac{6x^2}{6} = \frac{24}{6} \checkmark$$

$$\sqrt{x^2} = \sqrt{4} \checkmark$$

$$x = 2 \checkmark$$

$$|x = 2| \checkmark$$
2. $(x+3)(3) = (9)(4) \checkmark$

$$3x+9 = 36 \checkmark$$

$$3x = 36-9 \checkmark$$

$$\frac{3x}{3} = \frac{27}{3} \checkmark$$

$$\frac{3}{3} = \frac{3}{3}$$

$$x = 9$$

$$3. (2x)(x) = (10)^{2}$$

$$\frac{2x^{2}}{2} = \frac{100}{2}$$

$$\sqrt{x^{2}} = \sqrt{50}$$

$$\begin{vmatrix} x = 5\sqrt{2} \\ 4. & (x+2+x)(x) = (x+1)^2 \checkmark \\ 2x^2 + 2x = x^2 + 2x + 1 \checkmark \\ 2x^2 - x^2 + 2x - 2x = 1 \checkmark \\ \sqrt{x^2} = \sqrt{1} \checkmark \\ \hline{x = 1} \checkmark$$

5.
$$(x+8)(4) = (6)^2 \checkmark$$

 $4x + 32 = 36 \checkmark$
 $4x = 36 - 32 \checkmark$
 $\frac{4x}{4} = \frac{4}{4} \checkmark$
 $x = 1$
 $(y)(3) = (4)(1) \checkmark$
 $\frac{3y}{3} = \frac{4}{3} \checkmark$
 $y = \frac{4}{3}$

6.
$$(x+12)(x) = (8)^2$$

 $x^2 + 12x = 64$
 $x^2 + 12x + 36 = 64 + 36$
 $\sqrt{(x+6)^2} = \sqrt{100}$
 $x+6 = 10$
 $x = 10 - 6$
 $\boxed{x=4}$
 $(16)(4) = (y+9)(y)$
 $64 = y^2 + 9y$
 $64 + \frac{81}{4} = y^2 + 9y + \frac{81}{4}$
 $\sqrt{\frac{337}{4}} = \sqrt{(y+\frac{9}{2})^2}$

 $\sqrt{337}$

7.
$$(x+12)(7) = (11)^2 \checkmark$$

 $7x + 84 = 121 \checkmark$
 $7x = 121 - 84 \checkmark$
 $\frac{7x}{7} = \frac{37}{7} \checkmark$
 $x = \frac{37}{7} \checkmark$
 $(y)(9) = (5)(\frac{37}{7}) \checkmark$
 $\frac{9y}{9} = \frac{185}{(9)(7)} \checkmark$
 $y = \frac{185}{63} \checkmark$

 $y = \frac{-9 + \sqrt{337}}{2}$

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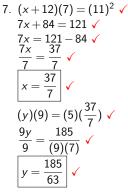
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$$(x+2+x)(x) = (x+1)^{2} \checkmark$$

 $2x^{2} + 2x = x^{2} + 2x + 1 \checkmark$
 $2x^{2} - x^{2} + 2x - 2x = 1 \checkmark$
 $\sqrt{x^{2}} = \sqrt{1} \checkmark$

$$\begin{bmatrix}
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 $x = 1$

$$2x^{2} - x^{2} + 2x - 2x = \sqrt{x^{2}} = \sqrt{1} \checkmark$$

$$x = 1$$

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$$4x = \frac{4}{4} = \frac{4}{4} \checkmark$$

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\hline
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