Perform the indicated operation on each of the following problems.

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1: The radical $\sqrt{4}$ simplifies to

(a) $\sqrt{16}$ (b) $\sqrt{2}$

(c) 2 (d) 4

2: The radical $\sqrt{67}$ is between which set of numbers?

(a) 5 and 6 (b) 6 and 7
(c) 7 and 8 (d) 8 and 9

3: Simplify $\sqrt{0}$

4: Simplify $-\sqrt{121}$

5: Add $5\sqrt{7}+4\sqrt{7}$

6: Add $6\sqrt{x}+7\sqrt{x}$

7: Subtract $5\sqrt{3a}-4\sqrt{3a}$

8: Multiply $\left(\sqrt{2}+\sqrt{7}\right)\left(\sqrt{2}-\sqrt{7}\right)$

9: Multiply $\left(\sqrt{2}+\sqrt{7}\right)^2$

10: Multiply $\sqrt{3}\sqrt{7}$

11: Multiply and simplify $\sqrt{14}\sqrt{14}$

12: Multiply and simplify; $\sqrt{2}\sqrt{x^3}$

13: Simplify $\sqrt{20}$

14: Simplify $\dfrac{\sqrt{20}}{\sqrt{5}}$

15: Simplify $\dfrac{\sqrt{12}}{\sqrt{75}}$

16: Rationalize the denominator $\dfrac{\sqrt{7}}{\sqrt{3}}$

17: Solve for x: $3\sqrt{x} = -7$

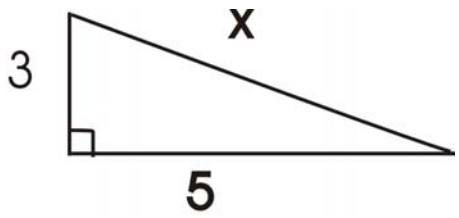
18: Solve for x: $\sqrt{x} = 8$

19: Solve for x: $\sqrt{2x+3} = 11$

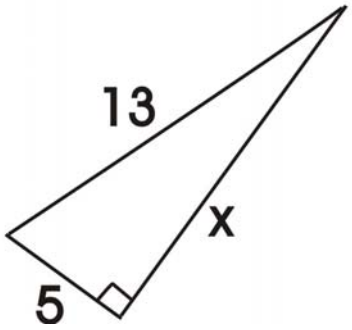
20: Solve for x: $\sqrt{2x+7} = \sqrt{3x+3}$

In the two right triangles below, find x

21:



22:



In the problems below, a and b are the legs of a right triangle and c is the hypotenuse

23: Using the Pythagorian theorem, find the length of leg a if $c = 10; b = 5\sqrt{3}$

24: Find the length of the hypotenuse, c : a=12 , b=5

25: Find the length of leg b: a=9 c=15

26: Problem from test 3: Solve for x: $\frac{1}{3} + \frac{5}{3}x = 6$

27: Problem from test 4: Divide and simplify $\frac{5^8 m^8}{5^3 m^3}$

28: Problem from test 5: Factor completely $5x^2 - 30x + 45$