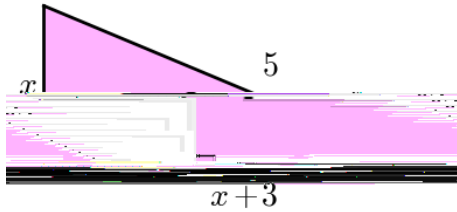




14. (5 marks) Simplify the following expression. Assume that all variables represent nonnegative real numbers.  $5\sqrt[3]{75m} - 4\sqrt[3]{27m}$
15. (5 marks) Simplify.  $(3\sqrt[3]{5} - 4\sqrt[3]{3})(2\sqrt[3]{5} + 3\sqrt[3]{3})$
16. (5 marks) Find the exact value of  $x$  in the following right-angle triangle.



17. (5 marks) Find the vertex and all intercepts of the parabola  $y = 4x^2 - 8x - 5$ , then graph it.
18. (5 marks) Suppose that nine couples live in a village, one couple has no child, two have a single-child, three have two children, two have three children, and the last couple has five children. Regarding the number of children per couple,
- What is the mean?
  - What is the median?
  - What is the mode?
  - What is the standard deviation?
19. (5 marks) Suppose that it costs \$5000 to start up a business selling snow cones. Furthermore, it costs \$0.50 per cone in labor and materials.
- Express the cost  $y$ , in dollars, to make  $x$  snow cones.
  - If you spend \$6000, how many snow cones are made?
20. (5 marks) Two houses on the same side of the street have house numbers that are consecutive even integers. The sum of the integers is 58. What are the two house numbers?

### Answers:

1.  $5x(x + 3y)(2 - 2y)$

2.  $(4x - 5)(2x - 1)$

3.  $f(4; 1)g$

4.  $y = 2x - 15$

5.  $2\sqrt[3]{5} - 4\sqrt[3]{3}$

7.  $x^2y^6$

8.  $20x^3y^2 - 5xy^5 + 21x^2$

9.  $2x^2 + x - 6$ , length and width are 7, area is 49.

10.  $\frac{9}{10}, \frac{9}{10}$

11.  $\frac{m - 1}{2m - 3}$

12.  $\frac{2x^2 + 5x + 12}{(x - 4)(x + 4)^2}$

13.  $\frac{8}{x}$

14.  $\frac{13}{15}\sqrt[3]{3m}$

15.  $\frac{1}{15} - \frac{1}{6}$

16.  $\frac{\sqrt[3]{41} - 3}{2}$

17. y-intercept (0; -5), x-intercepts (5/2; 0) and (-1/2; 0), vertex (1; -9).

18. Mean is 19/9, Median is 2, Mode is 2, Standard Deviation is approx. 1.45.

19.  $y = 5000 + 0.5x$ , 2000 snow cones

20. 28 and 30.

