

Find all real or imaginary solutions in #s 1 – 5..

1. (5 pts) $-3x - 7 = 2x + 21$

2. (5 pts) $\frac{3}{5}x - \frac{2}{3} = \frac{5}{6}$

3. (5 pts) $9x^2 = 7$

4. (5 pts) $5x^2 - 10x + 17 = 0$ (Leave your final answer in simplified radical form.)

5. (10 pts) Compute the discriminant for each of the following equations and tell me what it tells you about the solutions of the equations, *without having to solve them*, i.e., don't solve.

a. $10x^2 + 81x - 133 = 0$

b. $25x^2 - 50x + 28 = 0$



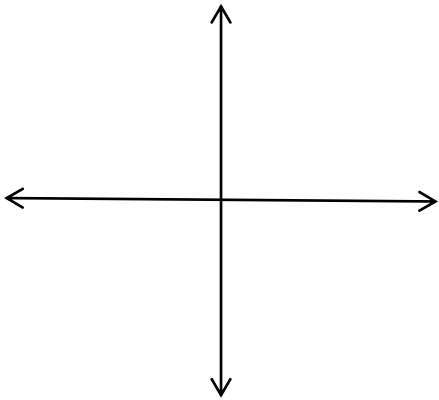
6. (10 pts) Solve $x^2 + 12x - 17 = 0$ by completing the square.

7. (5 pts) Find an equation of the line through $(2,5)$ and $(3,-7)$. Point-slope is preferred, but not required.

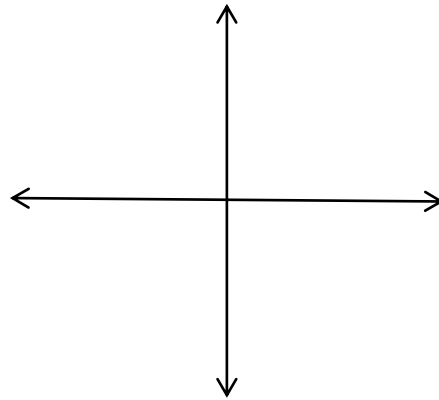
8. (5 pts) Find an equation of the line thru $(8, -6)$ that is parallel to the line $y = 3x - 11$.

9. (5 pts) Find an equation of the line thru $(8, -6)$ that is *perpendicular* to the line $y = 3x - 11$.

10. (5 pts) Sketch the graph of the line $y = -3$



11. (5 pts) Sketch the graph of the line $x = 57$



Solve the inequalities. Give your answer as a set and as an interval. You may want to use a number line graph to help you write your answer, but it is not required.

12. (5 pts) $-5x - 4 > 34$

13. (5 pts) $|2x - 7| \geq 8$

14. (5 pts) $|2x - 7| < 8$

15. (5 pts) $|2x - 3| > -7$

16. (5 pts) $|2x - 3| \leq -7$

17. (5 pts) How much 20% nitrate solution must be added to 50 liters of 50% nitrate solution to obtain a 34% nitrate solution?

18. (5 pts) John can do a job in 12 hours that takes Bob 16 hours. Suppose John sleeps in on the day they were to work together and shows up 2 hours late. How many hours does Bob end up working, if they finish the job together? How many hours does John end up working that day?

BONUS PROBLEMS

BONUS (5 pts) Re-write the function $f(x) = x^2 - 8x - 5$ in the form $f(x) = a(x - h)^2 + k$.

State the vertex of this parabola.

BONUS (5 pts) Re-write the function $g(x) = 5x^2 + 10x - 19$ in the form

$g(x) = a(x - h)^2 + k$. State the vertex of this parabola.

