WRITING ABSOLUTE VALUE INEQUALITIES GRAPH

An absolute value equation is an equation that contains an absolute value expression. You can write an absolute value inequality as a compound inequality.

The constant is the minimum value, and the graph of this situation will be two rays that head out to negative and positive infinity and exclude every value within 2 of the origin. So, graphically, the solution looks like this: The open circles at the ends of the blue line indicate "up to, but not including, these points. The dog can pull ahead up to the entire length of the leash, or lag behind until the leash tugs him along. However, the number 2. But can an absolute value ever be negative, let alone be less than a negative? Now, if we go to the other side, if you have something of the form f of x is greater than a. So if an x meets both of these constraints, its absolute value is definitely going to be less than Let's do positive 21, and let's do a negative 21 here. Let's do one more, because I know this can be a little bit confusing. I just wanted you to visualize what it means to have the absolute value be greater than 21, to be more than 21 away from 0. And I could actually write it like this. And, by the way, the correct conjunction is "or", not "and". So what we could say is 7x needs to be equal to one of these numbers, or 7x needs to be equal to one of these numbers out here. Since the inequality actually had the absolute value of the variable as less than the constant term, the right graph will be a segment between two points, not two rays. Due to the nature of the mathematics on this site it is best views in landscape mode. That's the equal sign. So "and" is the correct conjuction. Now, you might already be seeing a bit of a rule here. And then we just solve both of these equations. Divide both sides by 5. Well, all of these negative numbers that are less than negative 21, when you take their absolute value, when you get rid of the negative sign, or when you find their distance from 0, they're all going to be greater than Identifying the graphs of absolute value inequalities If the absolute value of the variable is less than the constant term, then the resulting graph will be a segment between two points. Affiliate Even when the inequalities are more complicated, the above pattern still holds. The absolute value of negative 11, only 11 away from 0. If it's less than negative a, maybe it's negative a minus another 1, or negative 5 plus negative a. Example 3 Solve each of the following. I don't want to make a careless mistake there. A ray beginning at the point 0. That means that the absolute value of f of x, or f of x has to be less than a away from 0. So that's telling us that whatever's inside of our absolute value sign has to be less than 7 away from 0. So in order to satisfy this thing in this absolute value sign, it has to be-- so the thing in the absolute value sign, which is 5x plus it has to be greater than negative 7 and it has to be less than 7, in order for its absolute value to be less than 7. Even when the exercises get more complicated, the above pattern will still hold. And actually, we've solved it, because this is only a one-step equation there. Since the absolute value will always be greater than any negative number, the solution must be "all x" or "all real numbers". Or we could write it like this, x is less than 12, and is greater than negative In interval notation, it would be everything between negative 12 and positive 12, and not including those numbers. But once you have this set up, and this just becomes a compound inequality, divide both sides of this equation by 7, you get x is less than or equal to negative 3. The something will be the part with the variable in it. We're doing this case right here. Hopefully that make sense. You have to be in this range. And if there's any topic in algebra that probably confuses people the most, it's this. In this inequality, they're asking me to find all the x-values that are less than three units away from zero in either direction, so the solution is going to be the set of all the points that are less than three units away from zero.