Math-08 Homework #9 Solutions

Reading

- Text book section 2.1

Problems

Consider the equation $y = x^2 - 1$

1). Find the x-intercepts (if any).

To find x-intercepts, we set y to 0:

$$0 = x^2 - 1$$

$$x^2 = 1$$

$$x = \pm 1$$

Remember, intercepts are points, so we need to state this answer as follows:

$$(\pm 1, 0)$$

2). Find the y-intercepts (if any).

To find y-intercepts, we set x to 0:

$$y = 0^2 - 1 = -1$$

$$(0, -1)$$

3). Test for symmetry (remember to show all three tests).

To test for x-axis symmetry, we replace y with $-y$ and see if we get the same equation back:

$$-y = x^2 - 1$$

$$y = -x^2 + 1 \neq x^2 - 1$$

No x-axis symmetry.

To test for y-axis symmetry, we replace x with $-x$ and see if we get the same equation back:

$$y = (-x)^2 - 1 = x^2 + 1$$

Has y-axis symmetry.

To test for origin symmetry, we replace both x and y:

$$-y = (-x)^2 - 1$$

$$y = -x^2 + 1 \neq x^2 - 1$$

No origin symmetry.

4). Using you calculator, graph the equation and use the "zero" function to determine the x-intercepts. Turn in screenshots showing the identification of each intercept.