1. Find the zeros
2. Identify test points
3. Check for Pass or Fail
4. Consider the zeros Pass or Fail
5. Shade number line
6. Convert interval notations
Graph the solution to the following inequality on the number line.

\((x+4)(x-2) \geq 0\)

1. zeros -4, 2
2. Test Points -5, 0, 3
3. \((-5+4)(-5-2)=7 > 0 \) ?yes PASS
   \((0+4)(0-2)=-8 > 0 \) no FAILS
   \((3+4)(3-2)=7 > 0 \) yes PASS
4. How about zeros yes!
5. \((-\infty, -4] \cup [2, \infty)\)

---

Graph the solution to the following inequality on the number line.

\(x^2 < 6x\)

Note that you can use the ALEKS graphing calculator to help get your answer.

same type...just get zero on one side

\(x^2 - 6x < 0\)

then...factor it so we can find zeros

\(x(x-6)<0\)
1. zeros: 0, 6
2. Test points -1, 3, 7
3. \((-1)(-1-6)=-1*-7=7 < 0 \) FAILS
   \(3(3-6)=3(-3)=-9 < 0 \) PASS
   \(7(7-6)=7*1=7 < 0 \) FAILS
4. zero FAIL because 0 < 0 fails
5. \((0, 6)\)
Graph the solution to the following inequality on the number line.

\[ x^2 + 6x + 8 < 0 \]

Note that you can use the ALEKS graphing calculator to help get your answer.

\[ (x + 4)(x + 2) < 0 \]

1. Zeros \(-4, -2\)
2. Tst Points \(-5, -3, 0\)
3. \((-5+4)(-5+2) = 3 < 0\) FAILS
   \((-3+4)(-3+2) = -1 < 0\) PASS
   \((0+4)(0+2) = 8 > 0\) FAILS
4. Zeros FAIL \(0 < 0\) NO
5.  
6. \((-4, -2)\)

Solve the following inequality.

\[ \frac{-x - 7}{x + 4} < 0 \]

Write your answer using interval notation.

1. Zeros (numerator + denominator): \(-7, -4\)
   \[-x - 7 = 0 \quad x + 4 = 0\]
2. Test points \(-8, -6, 0\)
3. \((-8 - 7) = \frac{1}{-8 + 4} = -4 < 0\) PASS
   \((-6 - 7) = \frac{-1}{-6 + 4} = -2\) FAILS
   \((0 - 7) = \frac{-7}{0 + 4} = \frac{-7}{4}\) PASS
4. \(-4\) is ALWAYS bad because zero from denominator, \(-7\) also FAILS
5.  
6. \((-\infty, -7) \cup (-4, \infty)\)
1. Find Zeros -9, -1, 7
2. Test Points -10, -3, 0, 9
3. \(-\frac{10+9}{(7-10)(-10+1)} = -\frac{1}{3}\) PASS
   -3.....PASS/FAIL
   0.....PASS/FAIL
   9.....PASS/FAIL
4. -9 fail -1, 7 both fail make denom 0

5. Finding the maximum or minimum of a quadratic function

Answer the questions below about the quadratic function.

\[ f(x) = 2x^2 - 20x + 53 \]

5. open up \(A=2\) so MIN

<table>
<thead>
<tr>
<th>Does the function have a minimum or maximum value?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\bigcirc) Minimum</td>
</tr>
<tr>
<td>(\bigcirc) Maximum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Where does the minimum or maximum value occur?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(x = \frac{-B}{2A} = \frac{-20}{4} = 5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the function's minimum or maximum value?</th>
</tr>
</thead>
<tbody>
<tr>
<td>(f(5) = 2<em>25 - 20</em>5 + 53 = 3)</td>
</tr>
</tbody>
</table>

where, when refer to X
What refer Y value
The cost $C$ (in dollars) of manufacturing $x$ radios at Jessica’s Stereo World is given by the function $C'(x) = x^2 - 500x + 68,763$. What is the minimum cost of manufacturing radios?

Do not round your answer.

**A=1 Positive means Minimum**

**Where is the minimum?** $-B/2 = 500/2 = 250$

**What min?** $C(250) = 250^2 - 500(250) + 68,763$

---

Use the graph of the parabola to fill in the table below.

- **x int**: 1, 5
- **y int**: 6

(a) Does the parabola open upward or downward?  
- [ ] upward  
- [ ] downward

(b) Find the equation of the axis of symmetry.  
- equation of axis of symmetry: $x = 3$

(c) Find the coordinates of the vertex.  
- vertex: $(3, -4)$