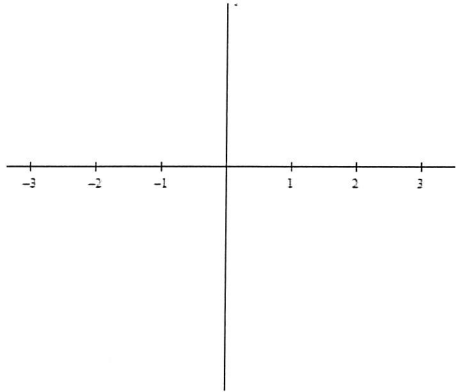
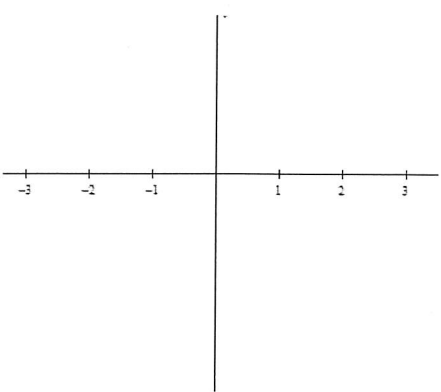


**Day #28 Homework**

$f(x) = 6x^4 + 11x^3 - 24x^2 - 39x - 10$	$g(x) = 2x^3 - 3x^2 - 8x + 12$
<p>1. Make a list of all the possible rational roots of <math>f(x)</math>.</p>	<p>4. Make a list of all the possible rational roots of <math>g(x)</math>.</p>
<p>2. Using your graphing calculator, sketch a graph of <math>f(x)</math> on the axes below. Which of the possible rational roots from above appear to be actual roots based on the graph?</p> 	<p>5. Using your graphing calculator, sketch a graph of <math>g(x)</math> on the axes below. Which of the possible rational roots from above appear to be actual roots based on the graph?</p> 
<p>3. Use synthetic division to determine the actual roots of <math>f(x)</math>.</p>	<p>6. Use synthetic division to determine the actual roots of <math>g(x)</math>.</p>

A table of values for a polynomial function,  $h(x)$ , defined by the equation  $h(x) = ax^3 + 5x^2 - 12x + c$ . The only roots of  $h(x)$  lie on the interval  $-3 < x < 2$ .

$x$	-3	-2	-1	0	1	2
$h(x)$	-77	0	15	4	3	48

7. Based on the values in the table, can it be determined that  $a > 0$  or  $a < 0$ ? Give a reason for your choice.

8. What is the value of  $c$  in the equation of  $h(x)$ ? Give a reason for your answer.

9. Find the value of  $a$  using the fact that  $h(1) = 3$ . Show your work.

10. Make a list of all the possible rational roots of  $h(x)$  now that the values of  $a$  and  $c$  are known. Then, investigate the graph and identify which three possible rational roots are the most probable rational roots.

11. Use synthetic division to show that the most probable roots you identified in question 10 are, in fact, rational roots of  $h(x)$ .