4.5 Polynomial and Rational Inequalities
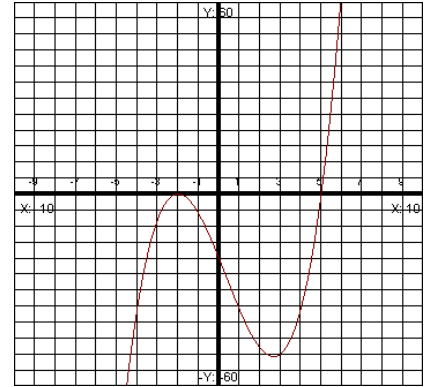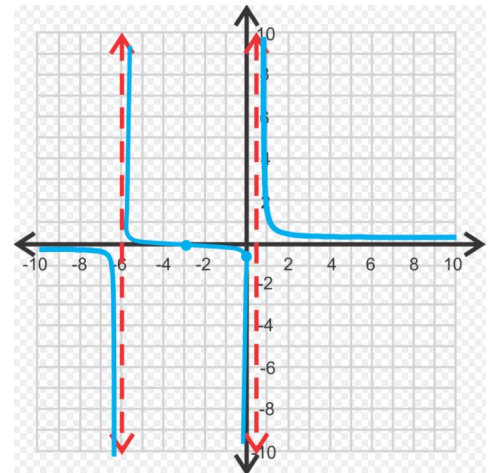
This section is looking a sections of graphs that are above and below the x-axis.

EXAMPLE: Use the graph of $f(x)$ given below to solve: (a) $f(x) \geq 0$ and (b) $f(x) < 0$.

EXAMPLE: Use the graph of $f(x)$ given below to solve: (a) $f(x) > 0$ and (b) $f(x) \leq 0$.

EXAMPLE: Solve and write you answer in interval notation: $(x-5)(x+2)^2 < 0$
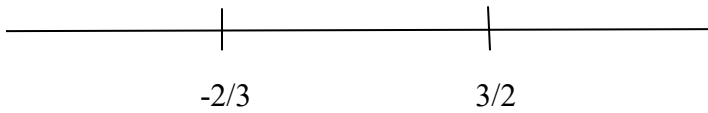
Table Method:

$x-5$			
$(x+2)^2$			

<div style="text-align:center">-2   5</div>

Number Line Method:

<div style="text-align:center">-2   5</div>

EXAMPLE: Solve and write you answer in interval notation: $6x^2 < 6 + 5x$

$3x + 2$			
$2x - 3$			

-2/3	3/2

Number Line Method:

-2/3	3/2

EXAMPLE: Solve and write you answer in interval notation: $3x^3 \geq -15x^2$

$3x^2$			
$x+5$			

                   -5   0

EXAMPLE: Solve and write you answer in interval notation: $\dfrac{(x-2)(x+1)}{x-4} \le 0$

$x-2$			
$x+1$			
$x-4$			

<div align="center">-1   2   4</div>

EXAMPLE: Solve and write you answer in interval notation: $\dfrac{x^2 - 4}{x - 3} > 0$

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────────┼──────────┼──────────┼────────
        -2         2          3
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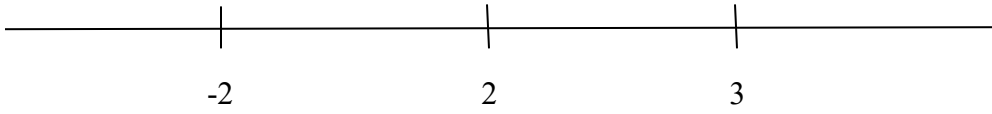
EXAMPLE: Solve and write you answer in interval notation: $\dfrac{x+2}{x-4} > 1$

6		
x – 4		

4

EXAMPLE: Solve and write you answer in interval notation: $\dfrac{2x^2+3x-4}{x+1} \le 2$

$x+2$			
$2x-3$			
$x+1$			

| | -2 | -1 | 3/2 |