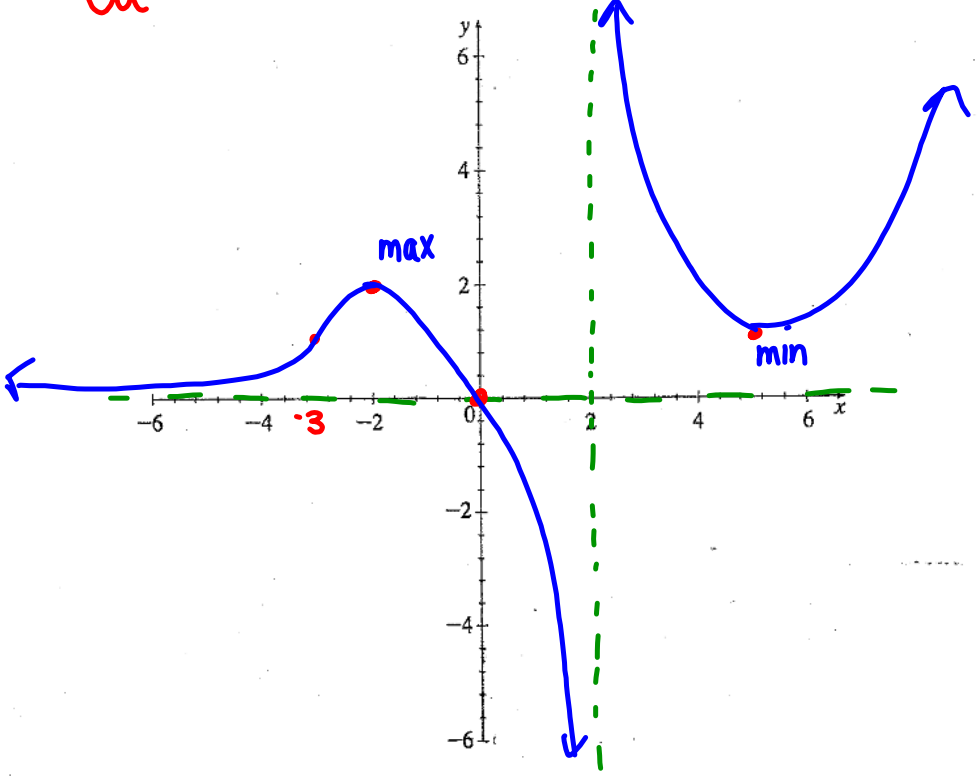
## Group Work 3, Section 4.6
## Putting it All Together (Version 1)

Sketch the graph of a function $f(x)$ which has **all** of the following properties:

1. $\lim_{x \to 2^-} f(x) = -\infty$ V.A.
2. $\lim_{x \to 2^+} f(x) = \infty$ V.A.
3. $\lim_{x \to -\infty} f(x) = 0$ H.A.
4. $f(-2) = 2$ (-2,2)
5. $f(5) = 1$ (5,1)
6. $f(0) = 0$ (0,0)
7. $f'(x) > 0$ if $x < -2$ or $x > 5$ pos inc $x<-2$ $x>5$
8. $f'(x) < 0$ if $-2 < x < 2$ or $2 < x < 5$ dec
9. $f'(5) = 0$ crt value
10. $f'(-2) = 0$ crt value
11. $f''(x) > 0$ if $x < -3$ or $x > 2$ CU
12. $f''(x) < 0$ if $-3 < x < 2$ CD



## Group Work 4, Section 4.6
## Putting it All Together (Version 2)

Sketch the graph of a function $f(x)$ which has **all** of the following properties:

1. $f$ has domain $(-\infty, -2) \cup (-2, \infty)$ V.A. $x = -2$
2. $f$ has range $(-5, \infty)$
3. The graph of $f$ has a vertical asymptote at $x = -2$
4. $\lim_{x \to -\infty} f(x) = 2$ H.A.
5. $\lim_{x \to \infty} f(x) = -5$ H.A.
6. $\lim_{x \to 3} f(x) = 2$
7. $f$ is discontinuous at $x = 3$ hole
8. $f'(x) > 0$ on $(-\infty, -2)$ inc
9. $f'(x) < 0$ on $(-2, 3)$ dec
10. $f'(4)$ is not defined, but $f$ is continuous at 4