Selected Solutions 11.1

10 decreasing in $\{(b,d), (f,g)\}$

12 $f'(x) > 0$ in $\{(a,b), (d,f), (g,h)\}$

16 local minimum at $x = d$, $x = g$

39 $f(x) = x^3 - 3x + 5$

$f'(x) = 3x^2 - 3 = 3(x^2 - 1)$ $\quad f'(x) = 0$ at $x = -1$, $x = 1$

$f'(-2) = 9 > 0$

$f'(0) = -3 < 0$ $\quad +++ (-1) --- (1) +++$

$f'(2) = 9 > 0$

local maximum at $x = -1$

local minimum at $x = 1$

55 $f(x) = x^4 - 18x^2$

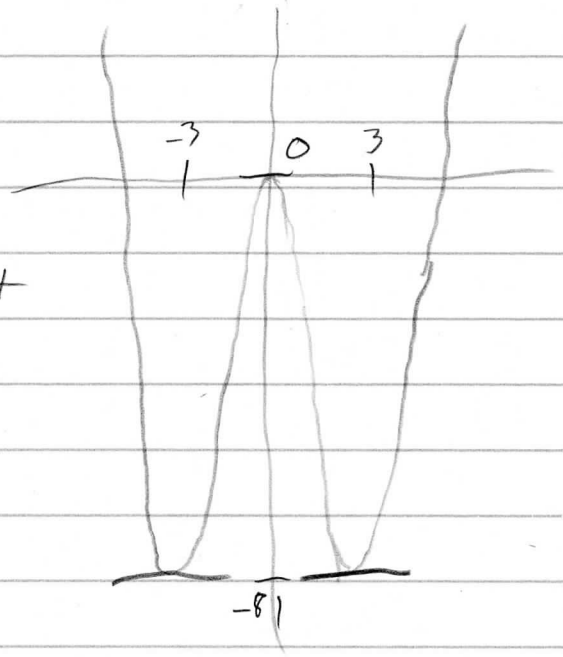
$f'(x) = 4x^3 - 36x = 4x(x^2 - 9) = 4x(x-3)(x+3)$

$f'(x) = 0$ at $x = 0$, $x = -3$, $x = 3$

$x =$		-4		-1		1		4
$4x$	$-$		$-$		$+$		$+$	
$x-3$	$-$		$-$		$-$		$+$	
$x+3$	$-$		$+$		$+$		$+$	
$f'(x)$	$-$		$+$		$-$		$+$	

$--- (-3) +++ (0) --- (3) +++$

min Max min



$f(-3) = -81$

$f(0) = 0$

$f(3) = -81$