Calculus Worksheet #5 Unit 1 Selected Solutions

Find all stationary points for each of the following functions. Use values of f(x), the function itself, to classify each as a maximum, a minimum, or neither. Show your work and your answers neatly organized.

2.
$$y = f(x) = x^3 + 6x^2 - 2$$

$f'(x) = 3x^2 + 12x$
$3x^2 + 12x = 0$
3x(x+4)=0
x = 0 or $x = -4$

X	f(x)	
-5	23 \	
-4	30	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
-1	3	
0	-2	∀ minimu m
1	5	

f(-4) = 30 is a relative maximum.

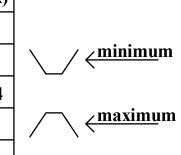
f(0) = -2 is a relative minimum.

Find all stationary points for each of the following functions. Use values of f'(x), the slope, to classify each as a maximum, a minimum, or neither. Show your work and your answers neatly organized.

7.
$$y = f(x) = -4x^3 + 21x^2 + 24x$$

$f'(x) = -12x^2 + 42x + 2x$
$-12x^2 + 42x + 24 = 0$
$2x^2 - 7x - 4 = 0$
(2x+1)(x-4)=0
x = -1/2 or $x = 4$

X	f(x)	f '(x)
-1		-30
-1/2	-6.25	0
0		+24
4	176	0
5		-66



f(-1/2) = -6.25 is a relative minimum.

f(4) = 176 is a relative maximum.