

A. 4. $f(-2) = 2(-2)^3 - 4(-2)^2 + (3)(-2) + 2$
 $= 2(-8) - 16 - 6 + 2$
 $= -36 \leftarrow \text{remainder}$

5. $f(1) = 0$
 $f(1) = (1)^3 - 2(1)^2 + b(1) - 4$
 $0 = 1 - 2 + b - 4$
 $5 = b$

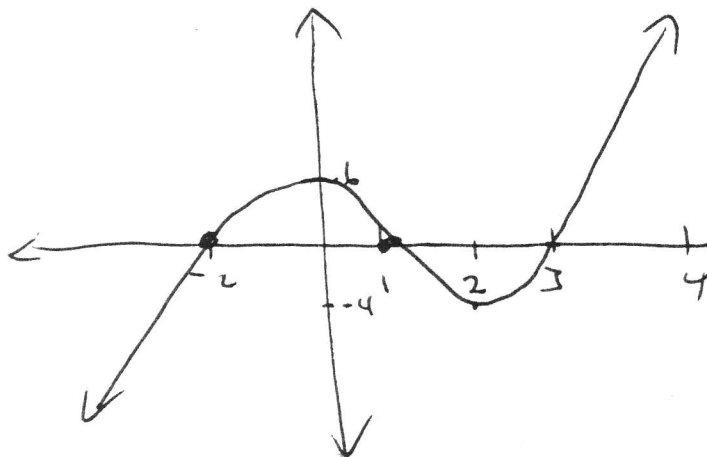
6 a) $f(1) = 0$
 $x-1$ is a factor

$$\begin{array}{r} x^2 - x - 6 \\ x-1 \overline{) x^3 - 2x^2 - 5x + 6} \\ \underline{x^3 - x^2} \\ -x^2 - 5x \\ \underline{-x^2 + x} \\ -6x + 6 \\ \underline{-6x + 6} \\ 0 \end{array}$$

Factors $(x-1)(x^2-x-6)$
 $(x-1)(x-3)(x+2)$

roots $\rightarrow 1, 3, -2$

x	y
-3	-24
0	6
2	-4
4	18



local min
 $(2, -4)$
 local max
 $(0, 6)$
 inflection pt
 $(1, 2)$

A. 6 b)

$$f(1) = 0$$

(5)

$x - 1$ is a factor

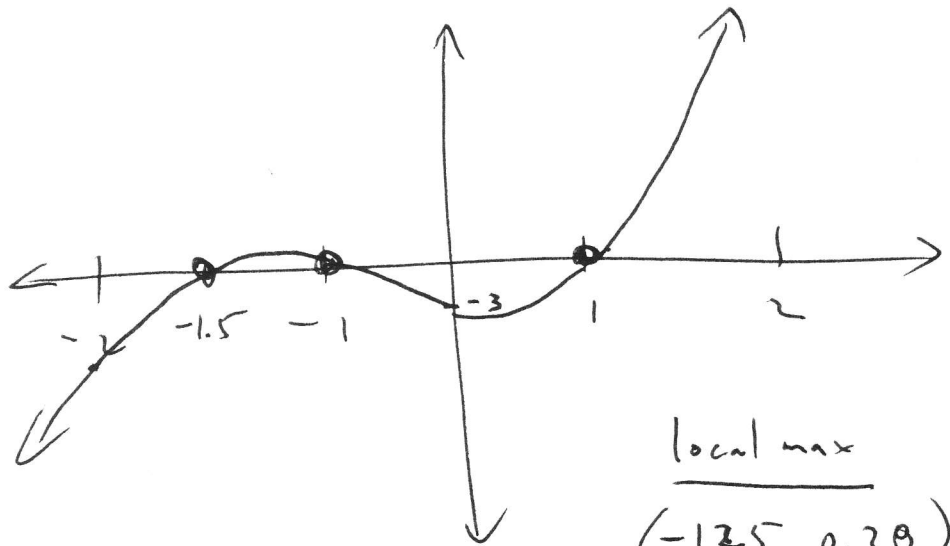
$$\begin{array}{r} 2x^2 + 5x + 3 \\ x-1 \overline{) 2x^3 + 3x^2 - 2x - 3} \\ \underline{2x^3 - 2x^2} \\ 5x^2 - 2x - 3 \\ \underline{5x^2 - 5x} \\ 3x - 3 \\ \underline{3x - 3} \\ 0 \end{array}$$

Factors are $(x-1)(2x^2 + 5x + 3)$

$(x-1)(x+1)(2x+3)$

roots $\rightarrow 1, -1, -\frac{3}{2}$

x	y
-2	-3
-1.25	0.20
0	-3
2	21



local max
 $(-1.25, 0.20)$

local min
 $(0, -3)$

inflection pt
 $(-0.5, -1)$