MATH 1A - PROBLEM SET (16.)

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* PROBLEM 16.1

$f(x) = x^6 - x^4 + c^2$

A) $c = 0$

$f(x) = x^6 - x^4$

$f'(x) = 6x^5 - 4x^3$

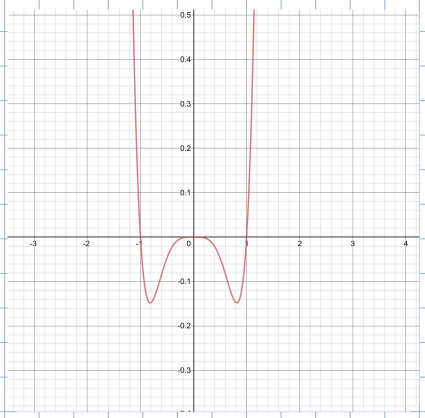
$f(x_0) = 0$

$6x^5 - 4x^3 = 0$

$x_1 = 0$

$x_2 = \frac{\sqrt{6}}{3}$

$x_3 = -\frac{\sqrt{6}}{3}$



$x = 2$ min $\longrightarrow$ stable

$x = 1$ max $\longrightarrow$ unstable

B) $c = 1$

$f(x) = x^6 - x^4 + x^2$

$f'(x) = 6x^5 - 4x^3 + 2x$

$f(x_0) = 0$

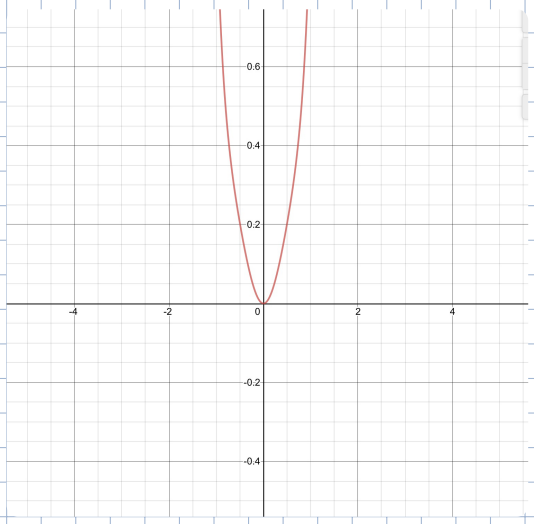
$6x^5 - 4x^3 + 2x = 0$

$x = 0$

$f''(x) = 30x^4 - 12x^2 + 2$

$f''(0) = 2$

$x = 0 \longrightarrow$ stable

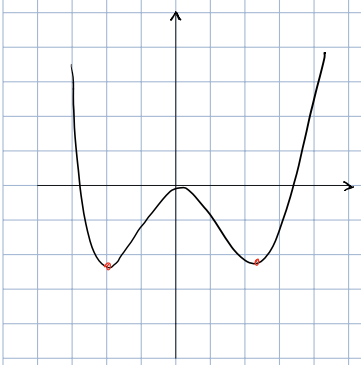


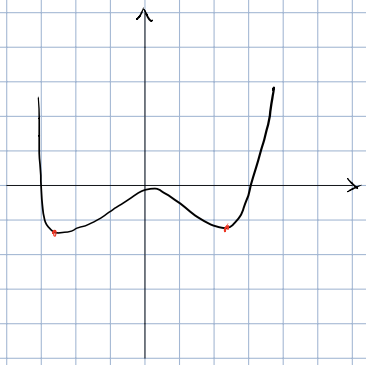
$c = 0$

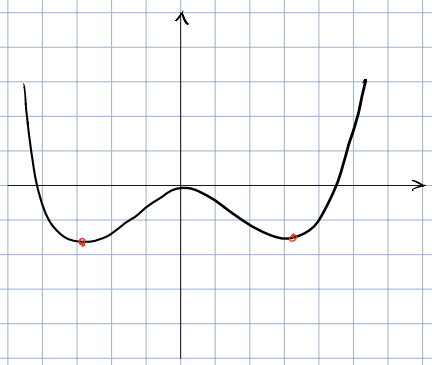
16.3 a)

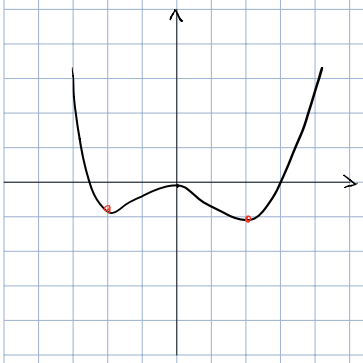
16.4 a. 3

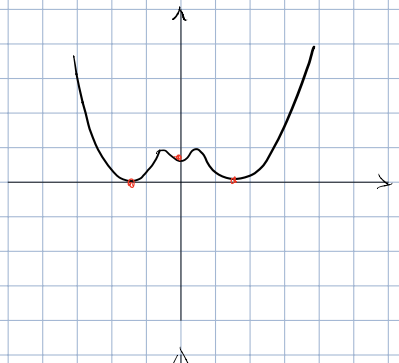
* PROBLEM 16.2

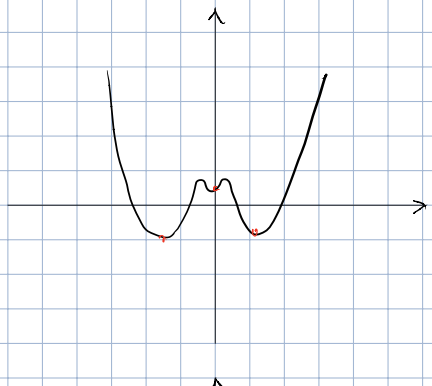


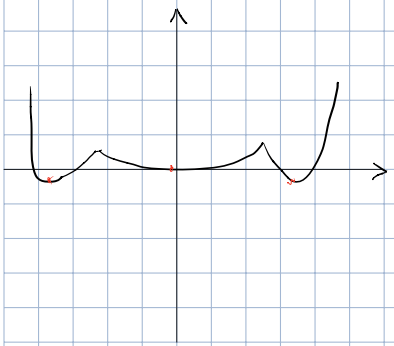


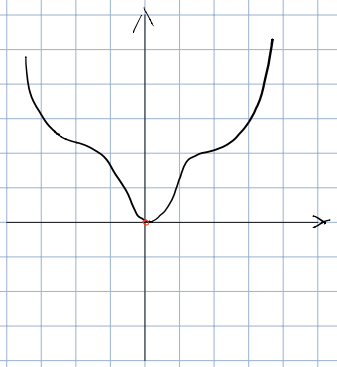


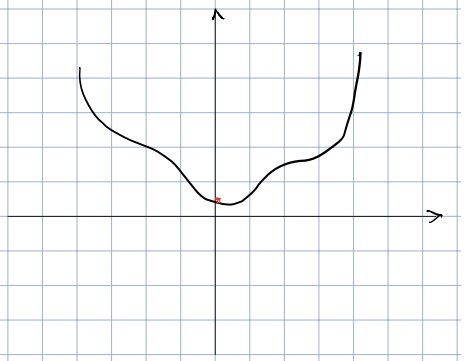


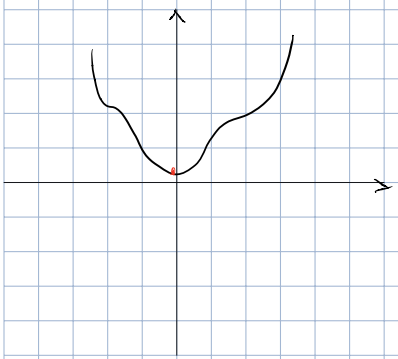












* PROBLEM 16.3, 16.4, 16.5

FOR 16.3 = 0.3

FOR 16.4 = 0