

FIRST NAME:

LAST NAME:

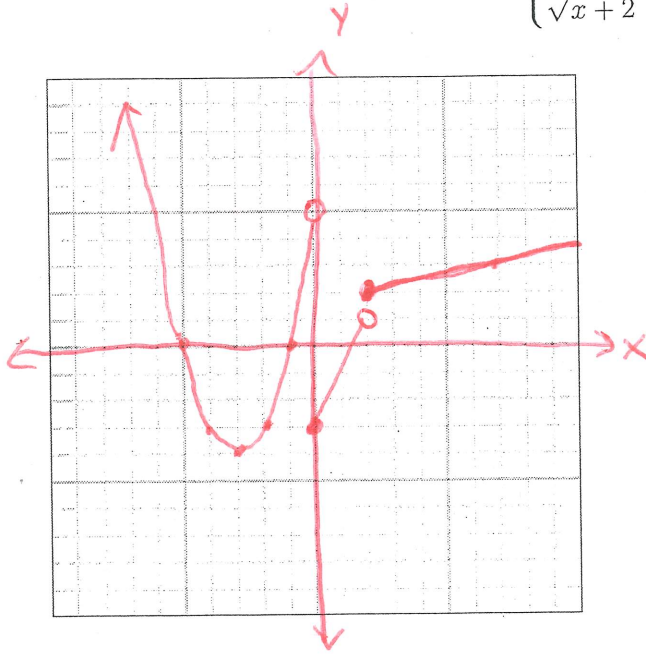
KEY

Math 25 - Fall 2016

Quiz 2: Tuesday August 23, 2016

1. (3 points) Graph the following piecewise function:

$$f(x) = \begin{cases} x^2 + 6x + 5 & \text{if } x < 0 \\ 2x - 3 & \text{if } 0 \leq x < 2 \\ \sqrt{x+2} & \text{if } 2 \leq x \end{cases}$$



$$x^2 + 6x + 5 = (x+2)(x+5)(x+1)$$

$$\text{roots} \Rightarrow x = -5, -1$$

2. (3 points) a) Convert the following quadratic function to vertex form:

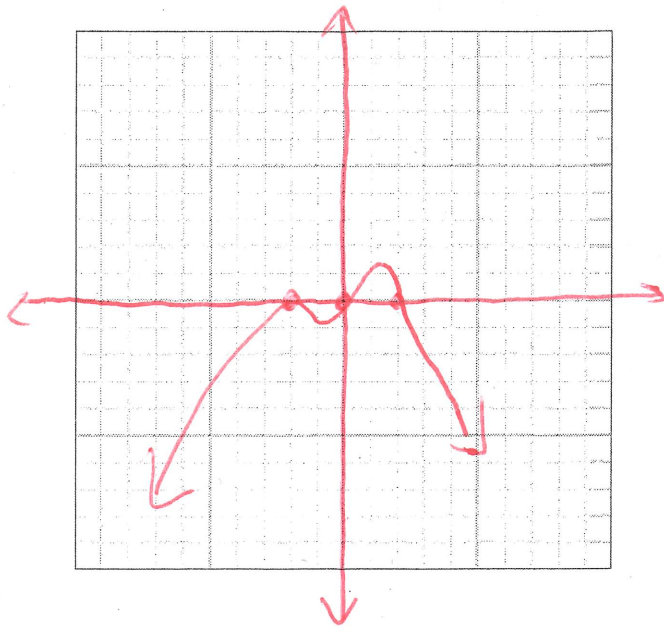
$$f(x) = 2x^2 - 8x + 3$$

- b) State the vertex and the axis of symmetry

$$\begin{aligned} 2x^2 - 8x + 3 &= 2(x^2 - 4x) + 3 \\ &= 2(x^2 - 4x + 4) + 3 - 8 \\ &= \boxed{2(x-2)^2 - 5} \\ &\Rightarrow (h, k) = \boxed{(2, -5)} \\ \text{axis of sym} &\Rightarrow \boxed{x=2} \end{aligned}$$

Please, show all work.

3. (3 points) Graph the function $f(x) = -x^3(x+2)^4(x-2)^3$



degree: $3+4+3=10$
Roots: $x=0$ mult 3
 $x=-2$ mult 4
 $x=+2$ mult 3

even power, negative sign
 \Rightarrow end behavior

4. (3 points) Divide the following polynomials using any method:

$$(x^5 + 4x^4 - 4x^3 - 22x^2 + 3x + 18) \div (x - 2)$$

2 \Rightarrow 2

$$\begin{array}{r} \underline{2} \mid 1 \quad 4 \quad -4 \quad -22 \quad 3 \quad 18 \\ \downarrow 2 \quad 12 \quad 16 \quad -12 \quad -18 \\ \hline 1 \quad 6 \quad 8 \quad -6 \quad -9 \mid 0 \end{array}$$

\Rightarrow $x^4 + 6x^3 + 8x^2 - 6x - 9$

Please, show all work.