MATH 118: Quiz 6

Name: Key

Directions:

- Show your thought process (commonly said as "show your work") when solving each problem for full credit.
- If you do not know how to solve a problem, try your best and/or explain in English what you would do.
- Good luck!

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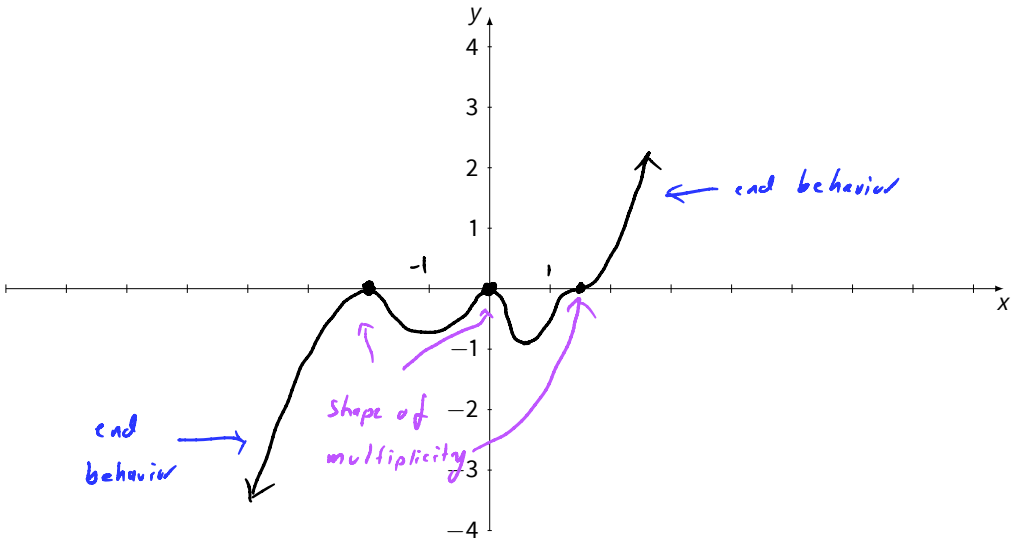
1. Sketch a rough graph of

$$P(x) = x^4(x+2)^2(2x-3)^3$$

Points between zeros are not necessary.

use the visual method



(1) Leading term is

$$x^4 \cdot x \cdot x \cdot 2x \cdot 2x \cdot 2x = 8x^9$$

end behavior: $y \to -\infty$ as $x \to -\infty$

$y \to \infty$ as $x \to \infty$

(2) zeros are $x = 0$, $x = -2$, $x = \frac{3}{2}$

multiplicity 4

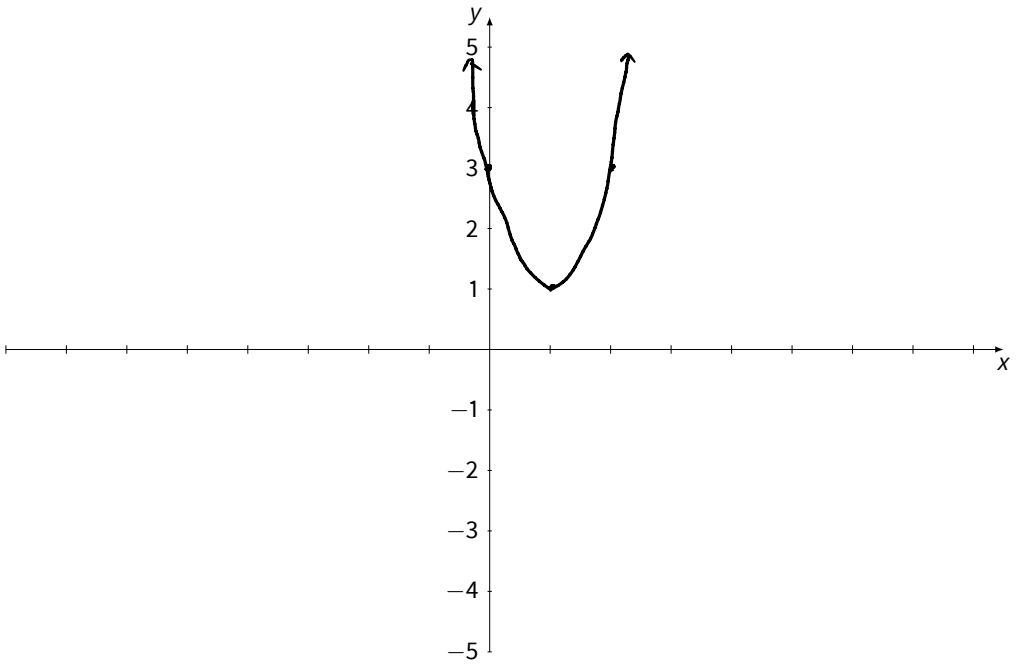
multiplicity 2

multiplicity 3

2. Graph

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

by putting $f(x)$ into standard form.



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

$= 2(x^2 - 2x) + 3$ $\quad \left(\frac{b}{2}\right)^2 = \left(\frac{2}{2}\right)^2 = 1^2 = 1$

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

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

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

$= \boxed{2(x-1)^2 + 1}$