

Math 151 - Quiz 6

March 30, 2016

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (4 points) Use long division to rewrite in terms of the quotient and remainder.

$$\frac{2x^5 - 11x^3 + 3x^2 + 16x - 13}{x^2 - 2} = 2x^3 - 7x + 3 + \frac{2x - 7}{x^2 - 2}$$

Handwritten work for problem 1:

$$\begin{array}{r} 2x^3 - 7x + 3 \\ x^2 - 2 \overline{) 2x^5 + 0x^4 - 11x^3 + 3x^2 + 16x - 13} \\ \underline{2x^5} - 4x^3 \\ -7x^3 + 3x^2 + 16x - 13 \\ \underline{-7x^3} + 14x \\ 3x^2 + 2x - 13 \\ \underline{3x^2} - 6 \\ 2x - 7 \end{array}$$

2. (2 points) Use synthetic division to rewrite in terms of the quotient and remainder.

$$\frac{3x^3 + 5x + 6}{x + 2} = 3x^2 - 6x + 17 - \frac{28}{x + 2}$$

Handwritten work for problem 2:

$$\begin{array}{r|rrrr} -2 & 3 & 0 & 5 & 6 \\ & & -6 & 12 & -34 \\ \hline & 3 & -6 & 17 & -28 \end{array}$$

3. (2 points) Use synthetic division to determine $f(3)$ when $f(x) = 2x^4 - 3x^3 - 6x + 5$.

$$\begin{array}{r|rrrrr} 3 & 2 & -3 & 0 & -6 & 5 \\ & & 6 & 9 & 27 & 63 \\ \hline & 2 & 3 & 9 & 21 & 68 \end{array}$$

$$f(3) = 68$$

4. (2 points) Use synthetic division to determine $f(-1)$ when $f(x) = 2x^2 - 5x - 7$.

$$\begin{array}{r|rrr} -1 & 2 & -5 & -7 \\ & & -2 & 7 \\ \hline & 2 & -7 & 0 \end{array}$$

$$f(-1) = 0$$