Math 3200 Quiz Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part I: Place the letter of the correct answer in the space provided.* (9 Marks)

1. What is the degree of the polynomial $\left(x\right)=x\left(x-5\right)^{2}\left(x+3\right)$ ? 1.\_\_\_\_

A) 2 B) 3 C) 4 D) 5

2. What is the remainder when the function $f\left(x\right)= x^{3}+2x^{2}-5x+1$ is divided 2.\_\_\_\_ by $x+3$?

A) -47 B) 1 C) 7 D) 31

3. What is the y-intercept of the function $=-x^{4}+5x^{3}-2x^{2}+4x-7$ ? 3.\_\_\_\_

A) -7 B) -1 C) 0 D) 7

4. What are the possible integral zeros of  ? 4.\_\_\_\_

1.  B)  C)  D) 

5. What is the end behaviour for the graph of $y=-2x^{4}+x^{3}-4x+2$? 5.\_\_\_\_

A) Up in Quad 1 and down in Quad 3 B) Up in Quad 1 and up in Quad 2

C) Up in Quad 2 and down in Quad 4 D) Down in Quad 3 and down in Quad 4

6. Which is not a polynomial function? 6.\_\_\_\_

A) $f\left(x\right)=4x^{3}$ B) $f\left(x\right)=\frac{3}{x-4}$

C) $f\left(x\right)=-2x^{5}+4x^{2}+6$ D) $f\left(x\right)=$ $\left(x+2\right)\left(x-3\right)$

7. What is the value of $k$, if $x+3$ is a factor of $2x^{3}+kx+6$? 7.\_\_\_\_

A) -20 B) -16 C) 16 D) 20

8. What is the leading coefficient of the function $=-x^{3}+4x-2$ ? 8.\_\_\_\_

A) -2 B) -1 C) 3 D) 4

9. Which function has $x-1$ as a factor? 9.\_\_\_\_

A) $f\left(x\right)=x^{2}-2x-3$ B) $f\left(x\right)=x^{3}-4x^{2}+x-6$

C) $f\left(x\right)=x^{3}-13x-12$ D) $f\left(x\right)= x^{3}-2x^{2}-5x+6$

Part II: Show all workings in the space provided to receive full marks. (16 Marks)

1. Divide $P\left(x\right)= x^{3}-2x^{2}+3x-4 $ by $x+2$ using long division. Write your answer as $\frac{P\left(x\right)}{x-a}=Q\left(x\right)+\frac{R}{x-a}$ and identify any restrictions on the variable. (4 Marks)

2. Factor fully. $P\left(x\right)=6x^{3}+x^{2}-32x-20$ (5 Marks)

3. Mary claims that all graphs of polynomial functions of the form  where *a, n,*
 and *b* are odd integers, extend from Quadrant II to Quadrant IV. Do you agree? Use
 examples to explain your answer. (3 marks)

4. For what value of $c$ will the polynomial $P\left(x\right)=2x^{3}+3x^{2}+cx+3$ have the same remainder when it is divided by $x+3$ and $-1$ ? (4 Marks)