Math 51B – Summer 2006

SKILLS PORTFOLIO C
EXPONENTS AND POLYNOMIALS
FACTORING AND APPLICATIONS

Answer the following questions in your portfolio:

Exponents and Polynomials

Textbook – Summary on page 329 : 15 – 39 every other odd

1) Simplify each expression. Write the final answer using only positive exponents.

a) $\left(\dfrac{2a^{-2}b}{3ab^{-3}}\right)^3$ b) $\dfrac{a^0+b^0}{2(a+b)^0}$ c) $\dfrac{\left(-3p^4q^{-5}\right)^{-3}\left(2p^{-4}q^3\right)^{-2}}{4p^5q^{-2}}$

d) $\left(\dfrac{2x^{-4}y}{x^5y^5}\right)^{-3}\left(\dfrac{4x^{-2}y^0}{x^7y^2}\right)^2$ e) $\dfrac{\left(-2x^2y^3\right)^2\left(3x^4y^5\right)^3}{\left(2x^2\right)^6\left(3y^8\right)}$

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2) Let $P(x)=-x^5+3x^4-\dfrac{1}{2}x^2-10$, $Q(x)=\left(x^4-3x-1\right)\left(-x^2-5\right)$ two polynomials.

a) How many terms does each polynomial have? ; b) What is the degree of each polynomial?;
c) What is the constant term of each? ; d) Find P(0) and Q(-1); e) Find their sum and product;
f) Find P(x)-Q(x); g) Divide Q by P; h) Find P(2x).

3) Simplify the following:

a) $(x+1)^3$ b) $(2a-1)^3$ c) $(x+2)^4$ d) $\left(\dfrac{1}{2}x^2+\dfrac{2}{5}x-1\right)\left(4x^3-\dfrac{5}{3}x^2-x+\dfrac{1}{2}\right)$ e) $\left(\dfrac{2}{3}x+\dfrac{5}{6}y\right)^2$

f) $\left(a^2b-ab^2\right)^2$ g) $\left(\dfrac{3}{2}a-\dfrac{8}{9}b^2\right)^2$ h) $\left(\dfrac{10}{11}x-1\right)\left(\dfrac{10}{11}x+1\right)$ i) $\left(3p+\dfrac{5}{4}q\right)\left(2p-\dfrac{5}{3}q\right)$

Factoring and Applications

Textbook – Summary on page 416: 1 – 79 every other odd

1) Solve each equation by factoring:

a) $x^2-9=0$ **b)** $x^2-6x-7=0$ c) $y^2+2y=0$

d) $-20x^2+6=-7x$ e) $x^3+4x^2+3x=0$ f) $3x^2-21x=-30$

g) $10x^2+43x=9$ h) $(2x+3)(3x-5)=-10$

j) $(3x-5)(4x+1)=24$ l) $(3x+1)^2-9x^2=31$