

Math 101
Exam #2 Review Session

1. Perform the indicated operation and simplify (no negative exponents and perform all multiplications – i.e. $2^3 = 8$):

a) $(x^2 y^3)(x^{-4} y^2)$	b) $4 + 3x^0$
c) $\left(\frac{y^6 x^{-1}}{y^{-8} x^3}\right)^{-4}$	d) $(2ab^3)^2(a^2b)^3$
e) $\frac{z^{11}}{z^{-2}}$	f) $\frac{x^{-5}}{x^{-9}}$
g) $\frac{(x^2 y^{-3})^2 (x^2 y)^{-4}}{(x^{-5} y^2)^{-2}}$	

2. Perform the indicated operations and simplify. Then give the degree of the resulting polynomial and tell whether it is a monomial, binomial, trinomial or none of these.

a) $(5x^2 - 7xy + y^2) + (-6x^2 - 3xy - y^2) + (x^2 + xy - 2y^2)$

b) $(6x^3 y^2 - 4x^2 y - 6x) - (-5x^3 y^2 + 4x^2 y + 6x^2 - 6)$

3. Find each product.

a) $(x - 9)^2$

b) $(x + 4)(x - 7)$

c) $(x^3 - 2x + 3)(4x^2 - 5x)$

d) $(1 - 3x^4)^2$

e) $x^2 y(x + 2y)(x - 7y)$

f) $(x - 8)^2 - (x + 4)^2$

4. Divide and simplify.

a) $\frac{10x^3 - x^2 + 6x}{2x}$

b) $(x^2 + 2x - 12) \div (x - 3)$

c) $(2x^5 + x^3 - x^2 + 1) \div (x^2 - 1)$

d) $(x^3 + 1) \div (x + 1)$

Answers

1. a) $\frac{y^5}{x^2}$ b) 7
c) $\frac{x^{16}}{y^{56}}$ d) $4a^8b^9$
e) z^{13} f) x^4
g) $\frac{1}{x^{14}y^6}$
2. a) $-9xy - 2y^2$, degree = 2, binomial
b) $11x^3y^2 - 8x^2y - 6x - 6x^2 + 6$, degree = 5, none of these
3. a) $x^2 - 18x + 81$ b) $x^2 - 3x - 28$
c) $4x^5 - 5x^4 - 8x^3 + 22x^2 - 15x$ d) $1 - 6x^4 + 9x^8$
e) $x^4y - 5x^3y^2 - 14x^2y^3$ f) $-24x + 48$
4. a) $5x^2 - \frac{x}{2} + 3$ b) $x + 5 + \frac{3}{x-3}$
c) $2x^3 + 3x - 1 + \frac{3x}{x^2 - 1}$ d) $(x^2 - x + 1)$