

**Test 4**  
Dusty Wilson  
Math 085

Name: key.

Property is a nuisance.

Paul Erdős (1913 - 1996)  
Hungarian mathematician

**No Calculators**

*No work = no credit.*

1.) (12 pts) Use the properties of exponents to simplify the following:

a.)  $5^3 \cdot 5^2$

$$\underline{5^5}$$

b.)  $x^4 \cdot x^5 \cdot x^8$

$$\underline{x^{17}}$$

c.)  $(2 \cdot x)^3$

$$\underline{8x^3}$$

d.)  $\frac{x^5 y^9}{x^7 y^6}$

$$\underline{\frac{y^3}{x^2}}$$

e.)  $\left(\frac{x^3 \cdot x^7}{x^4}\right)^2$

$$\frac{x^6 x^{14}}{x^8}$$

$$\underline{x^{12}}$$

f.)  $\frac{(ab)^5}{a^8 \cdot b^3}$

$$\frac{a^5 b^5}{a^8 b^3}$$

$$\underline{\frac{b^2}{a^3}}$$

2.) (2 pts) Evaluate:  $3x^2 - 4x + 7$  when  $x = -2$

$$3(-2)^2 - 4(-2) + 7$$

$$3(4) + 8 + 7$$

Solution: 27

3.) (8 pts) Find and simplify the following. Express results in descending order.

a.)  $(3x^2 + 4x - 5) + (x^2 - 7x + 4)$

$$\underline{4x^2 - 3x - 1}$$

b.)  $(6a^2 + 8a - 10) - (-3a^2 - 2a + 7)$

$$+ 3a^2 + 2a - 7$$

$$\underline{9a^2 + 10a - 17}$$

4.) (4 pts) Find the product. Express results in descending order (when possible).

a.)  $5x^2(3x^4 - 6x^3 + 5x^2)$

$$\underline{15x^6 - 30x^5 + 25x^4}$$

b.)  $3m^2n^3(5m^3 - 7mn^2 + mn - 2n)$

$$\underline{15m^5n^3 - 21m^3n^5 + 3m^3n^4 - 6m^2n^2}$$

5.) (4 pts) Find the quotient:

a.)  $\frac{15u^4w^5}{3u^2w^3}$

$$\underline{5u^2w^2}$$

b.)  $\frac{12x + 2x^3y^2 - 8x^2}{4xy}$

$$= \frac{12x}{4xy} + \frac{2x^3y^2}{4xy} - \frac{8x^2}{4xy}$$

$$\underline{\frac{3}{y} + \frac{x^2y}{2} - \frac{2x}{y}}$$

Simplify

6.) (16 pts) Find the degree and product of each of the following expressions. Write your resultant polynomials in descending order.

a.)  $(6t+1)(t-7)$

b.)  $(x+1)^2$

$$6t^2 - 42t + t - 7$$

Degree: 2 & Polynomial:  $6t^2 - 41t - 7$  Degree: 2 & Polynomial:  $x^2 + 2x + 1$

c.)  $(5r+m)(5r-m)$

d.)  $(x+1)(x^2-x+1)$

$$x^3 - x^2 + x + x^2 - x + 1$$

Degree: 2 & Polynomial:  $25r^2 - m^2$  Degree: 3 & Polynomial:  $x^3 + 1$

7.) (4 pts) Find the quotient:  $(x^3 + x^2 - 13x + 14) \div (x - 2)$

$$\begin{array}{r}
 x - 2 \overline{) x^3 + x^2 - 13x + 14} \\
 \underline{-(x^3 - 2x^2)} \phantom{+ 14} \\
 3x^2 \phantom{- 13x + 14} \\
 \underline{-(3x^2 - 6x)} \phantom{+ 14} \\
 -7x \phantom{+ 14} \\
 \underline{-(-7x + 14)} \\
 0
 \end{array}$$

○ Solution:  $x^2 + 3x - 7$