

Test 4 Review

**Time:** 50 minutes

**Number of questions:** ??

**Example 1: Multiply.**

a.  $(24x^5)(6x^7)(5x^3) = 720 x^{5+7+3} = 720x^{15}$

b.  $7x(x^3 + 2x^2 - 3x + 6) = 7x^4 + 14x^3 - 21x^2 + 42x$

**FOIL**

c.  $(x - 5)(3x + 7) = 3x^2 + 7x - 15x - 35 = 3x^2 - 8x - 35$

**Example 2: Expand**

$(a+b)^2 = a^2 + 2ab + b^2$

a.  $(x + 7)^2 = x^2 + 2(x)(7) + (7)^2 = x^2 + 14x + 49$

$(a-b)^2 = a^2 - 2ab + b^2$

b.  $(x - 9)^2 = x^2 - 2(x)(9) + (9)^2 = x^2 - 18x + 81$

$(x-9)(x-9) = x^2 - 9x - 9x + 81 = x^2 - 18x + 81$

**Example 3: Factor completely.**

a.  $72x^4y^3 - 45x^2y^4 = 9x^2y^3(8x^2 - 5y)$

$\frac{72x^4y^3}{9x^2y^3} \quad \frac{-45x^2y^4}{9x^2y^3}$

b.  $7m + 7n - mn - n^2$

$= 7(m+n) - n(m+n)$

$= (m+n)(7-n)$

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$$a^2 - b^2 = (a-b)(a+b)$$

c.  $64x^2 - 81 = (8x)^2 - (9)^2 = (8x-9)(8x+9)$

d.  $25x^2 - 49y^2 = (5x)^2 - (7y)^2 = (5x-7y)(5x+7y)$

$$a^2 + 2ab + b^2 = (a+b)^2$$

e.  $x^2 + 12x + 36 = (x+6)^2$   
 Product = 36  
 Sum = 12  
 $(x+6)(x+6) = (x+6)^2$   
 $a^2 - 2ab + b^2 = (a-b)^2$

f.  $x^2 - 16x + 64 = (x-8)^2$   
 Product = 64  
 Sum = -16  
 $(x-8)(x-8) = (x-8)^2$

g.  $x^2 - 9x + 18 = (x-6)(x-3)$   
 Product = 18  
 Sum = -9

h.  $y^2 + 15y + 56 = (y+7)(y+8)$   
 Product = 56  
 Sum = 15

i.  $3x^2 + 8x + 5 = 3x^2 + 3x + 5x + 5 = 3x(x+1) + 5(x+1) = (x+1)(3x+5)$   
 Product = 3(5) = 15  
 Sum = 8  
 3, 5

Example 4: Solve by factoring.

a.  $x^2 - x - 20 = 0$   
 Product = -20  
 Add = -1 -5, 4  
 $(x-5)(x+4) = 0$   
 $x-5=0$     $x+4=0$   
 $x=5$     $x=4$

b.  $x^2 + 16x - 36 = 0$   
 Product = -36  
 Sum = 16  
 18, -2  
 $(x+18)(x-2) = 0$   
 $x+18=0$     $x-2=0$   
 $x=-18$     $x=2$