

Name: _____

Show work needed to justify your answer.

Date: _____

HW: # 21: Math IBSL - Standard 21 - The Binomial Theorem

5 points

Expand the following using the binomial theorem:

2 $(2 - b)^5$

$$1(2)^5(-b)^0 + 5(2)^4(-b)^1 + 10(2)^3(-b)^2 + 10(2)^2(-b)^3 + 5(2)^1(-b)^4 + 1(2)^0(-b)^5$$

$$\boxed{32 - 80b + 80b^2 - 40b^3 + 10b^4 - b^5}$$

0							
1						1	
2					1	2	1
3				1	3	3	1
4			1	4	6	4	1
5		1	5	10	10	5	1

3 $(2x - 1)^6$

6 | 1 6 15 20 15 6 1

$$1(2x)^6(-1)^0 + 6(2x)^5(-1)^1 + 15(2x)^4(-1)^2 + 20(2x)^3(-1)^3 + 15(2x)^2(-1)^4 + 6(2x)^1(-1)^5 + 1(2x)^0(-1)^6$$

$$64x^6 - 192x^5 + 240x^4 - 160x^3 + 60x^2 - 12x - 1$$

4 $(4x + y)^4$

$$1(4x)^4(y)^0 + 4(4x)^3(y)^1 + 6(4x)^2(y)^2 + 4(4x)^1(y)^3 + 1(4x)^0(y)^4$$

$$256x^4 + 256x^3y + 96x^2y^2 + 16xy^3 + y^4$$

6 $(3x + 4y)^5$

$$1(3x)^5(4y)^0 + 5(3x)^4(4y)^1 + 10(3x)^3(4y)^2 + 10(3x)^2(4y)^3 + 5(3x)^1(4y)^4 + 1(3x)^0(4y)^5$$

$$243x^5 + 1620x^4y + 4320x^3y^2 + 5760x^2y^3 + 3840xy^4 + 1024y^5$$