Homework:

Use Pascal's Triangle to expand the expression:

1. $(2x-3y)^3$

2. $(x+2y)^4$

3. $\left(1+\frac{1}{x}\right)^6$

4. Find the last two terms in the expansion $\left(a^{2/3}+a^{1/3}\right)^{25}$

5. If $f(x)=x^4$, find the difference quotient $\frac{f(x+h)-f(x)}{h}$

6. If $f(x)=x^6$, find the difference quotient $\frac{f(x+h)-f(x)}{h}$.

   If you substitute 0 for h in your answer, what is your answer? We will discuss the significance of this problem in class.

Answers are on the back.

Answers

1. $8x^3 - 36x^2y + 54xy^2 - 27y^3$

2. $x^4 + 8x^3y + 24x^2y^2 + 32xy^3 + 16y^4$

3. $1 + \frac{6}{x} + \frac{15}{x^2} + \frac{20}{x^3} + \frac{15}{x^4} + \frac{6}{x^5} + \frac{1}{x^6}$

4. $25a^{26/3} + a^{25/3}$

5. $4x^3 + 6x^2h + 4xh^2 + h^3$

6. $6x^5 + 15x^4h + 20x^3h^2 + 15x^2h^3 + 6xh^4 + h^5$

   If $h = 0$, we get $6x^5$.