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| --- |
| **Binomial Expansion** |
| **(a)** Expand and simplify $(x+2)^{3}$

|  |  |  |  |
| --- | --- | --- | --- |
| Pascal’s Triangle | Powers of 1st term | Powers of 2nd term | Simplified |
| $$1$$ | $$x^{3}$$ | $$2^{0}$$ | $$x^{3}$$ |
| $$3$$ | $$x^{2}$$ | $$2^{1}$$ | $$6x^{2}$$ |
| $$3$$ | $$x^{1}$$ | $$2^{2}$$ |  |
| $$1$$ | $$x^{0}$$ | $$2^{3}$$ |  |

$$=x^{3}+6x^{2}+ $$ | **(b)** Expand and simplify $(x-5)^{3}$

|  |  |  |  |
| --- | --- | --- | --- |
| Pascal’s Triangle | Powers of 1st term | Powers of 2nd term | Simplified |
| $$1$$ | $$x^{3}$$ | $$(-5)^{0}$$ | $$x^{3}$$ |
| $$3$$ | $$x^{2}$$ | $$(-5)^{1}$$ | $$-15x^{2}$$ |
|  |  |  |  |
|  |  |  |  |

$$=x^{3}-15x^{2}+ $$ |
| **(c)** Expand and simplify $(x+y)^{4}$

|  |  |  |  |
| --- | --- | --- | --- |
| Pascal’s Triangle | Powers of 1st term | Powers of 2nd term | Simplified |
| $$1$$ | $$x^{4}$$ | $$y^{0}$$ |  |
| $$4$$ | $$x^{3}$$ | $$y^{1}$$ |  |
| $$6$$ | $$x^{2}$$ | $$y^{2}$$ |  |
|  |  |  |  |
|  |  |  |  |

 | **(d)** Expand and simplify $(2x+1)^{4}$

|  |  |  |  |
| --- | --- | --- | --- |
| Pascal’s Triangle | Powers of 1st term | Powers of 2nd term | Simplified |
| $$1$$ | $$(2x)^{4}$$ | $$1^{0}$$ | $$16x^{4}$$ |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

 |
| **(e)** Expand and simplify $(3x-2)^{5}$

|  |  |  |  |
| --- | --- | --- | --- |
| Pascal’s Triangle | Powers of 1st term | Powers of 2nd term | Simplified |
| $$1$$ | $$(3x)^{5}$$ | $$(-2)^{0}$$ |  |
| $$5$$ | $$(3x)^{4}$$ | $$(-2)^{1}$$ |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

 | **(f)** Expand and simplify $(4-y)^{5}$

|  |  |  |  |
| --- | --- | --- | --- |
| Pascal’s Triangle | Powers of 1st term | Powers of 2nd term | Simplified |
| $$1$$ | $$4^{5}$$ | $$(-y)^{0}$$ |  |
|  |  |  |  |
|  |  |  |  |
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