

§ 7.7 Homework Solutions

4) Let $X = x^3$ and $Y = -2y^2$. Then the 4th term of $(X+Y)^{12}$ is $\binom{12}{3} X^9 Y^3$
 $= \binom{12}{3} (x^3)^9 (-2y^2)^3 = \underline{-1760 x^{27} y^6}$

5) a) $\binom{20}{0} x^{20} + \binom{20}{1} x^{19} y + \binom{20}{2} x^{18} y^2$ ($= x^{20} + 20 x^{19} y + 190 x^{18} y^2$)

b) $\binom{20}{18} x^2 y^{18} + \binom{20}{19} x y^{19} + \binom{20}{20} y^{20}$ ($= 190 x^2 y^{18} + 20 x y^{19} + y^{20}$)

c) [BB] d) $\binom{20}{7}$ (or $\binom{20}{13}$)

6) [BB]

10) The terms are of the form $\binom{20}{k} x^{\frac{20-k}{2}} (-2/x^2)^k$ and so the exponent of x is
 $20 - k - 2k$

$$20 - k - 2k = 5 \Rightarrow k = 5$$

So the coefficient is $\binom{20}{5} (-2)^5 = \underline{\underline{(-32) \binom{20}{5}}}$

20) [BB]