Review Set 7A #3, 6

(3) $\binom{6}{r}(2x^2)^{6-r}\left(\frac{-1}{x}\right)^r$

$\binom{6}{r}2^{6-r}x^{12-2r}\frac{(-1)^r}{x^r}$

$\binom{6}{r}2^{6-r}(-1)^r x^{12-3r} = \_\_\_ x^0$ (constant term)

$12-3r=0$

$r=4$

$\binom{6}{4}2^2\cdot(-1)^4 = \boxed{60}$

(6) a. $6+1=\boxed{7}$

b. $\binom{6}{r}(3x^2)^{6-r}\left(\frac{1}{x}\right)^r$

$\binom{6}{r}3^{6-r}x^{12-2r}\frac{1^r}{x^r}$

$\binom{6}{r}3^{6-r}\cdot x^{12-3r} = \_\_\_ x^0$ (constant term)

$12-3r=0$

$r=4$

$\binom{6}{4}3^2 = \boxed{135}$

c. If the expansion has a term involving x^5, then $12-3r=5$ should give a non-negative integer answer.

$12-3r=5$

$-3r=-7$

$r=7/3$ is not an integer.

Therefore, there is no term involving x^5.

Review Set 7B #1, 3, 5

(1) $\binom{6}{r} x^{6-r} \cdot 5^{r} = \_\_\_ x^{3}$

$6-r=3$

$r=3$

$\binom{6}{3} x^{3} \cdot 5^{3} = \boxed{2500} x^{3}$

(3) $\binom{12}{r} (2x)^{12-r} \left(\frac{-3}{x^2}\right)^{r}$

$\binom{12}{r} 2^{12-r} x^{12-r} \cdot \frac{(-3)^r}{x^{2r}}$

$\binom{12}{r} 2^{12-r} (-3)^r x^{12-3r} = \_\_\_ x^{-6}$

$12-3r=-6$

$r=6$

$\binom{12}{6} 2^{6} (-3)^{6} x^{-6} = \boxed{43110144} x^{-6}$

(5) $\binom{10}{r} m^{10-r} \cdot (-2n)^{r}$

$\binom{10}{r} m^{10-r} \cdot (-2)^r \cdot n^{r} = k m^{8} n^{2}$

$r=2$

$\binom{10}{2} m^{8} (-2)^{2} n^{2} = 180 m^{8} n^{2}$

So, $\boxed{k=180}$