

Day 25 Bellwork:

1. Coefficient of  $a^2$  in expansion of  $(2a + 1)^5$

$$\begin{array}{r}
 1 \quad (2a)^5 \quad (1)^0 \quad 2a^5 + 80a^4 + 80 \\
 5 \quad (2a)^4 \quad (1)^1 \\
 10 \quad (2a)^3 \quad (1)^2 \\
 \star 10 \cdot (2a)^2 \cdot (1)^3 \rightarrow 10 \cdot 4a^2 \rightarrow 40a^2
 \end{array}$$

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2. 2nd term in expansion of  $(y - 2x)^4$

$$\begin{array}{r}
 1 \quad y^4 \quad (-2x)^0 \\
 \star 4 \cdot y^3 \quad (-2x)^1 \\
 6 \\
 4 \\
 1
 \end{array}
 \rightarrow
 \boxed{-8xy^3}$$

### Exercises 4.5

- (a)  $q(x) = x - 1$ ,  $r(x) = 15x - 12$       (c)  $q(x) = 2x^2 - 1$ ,  $r(x) = 3$   
(b)  $q(x) = x^2 + 2x - 6$ ,  $r(x) = 33$       (d)  $q(x) = x^2 - 2$ ,  $r(x) = 4x - 5$
- (a)  $(3x - 2)(x + 1)(x - 3)$   
(b)  $(x - 2)(x^2 - 2x + 2)$   
(c)  $x(2x - 1)(x + 3)$   
(d)  $(x + 2)^3$
- (a) 2,  $\frac{-1+\sqrt{5}}{2}$ ,  $\frac{-1-\sqrt{5}}{2}$   
(b)  $\frac{2}{5}$ , -1, -4  
(c) 3, 2  
(d) 1  
(e) 2, -2, -5
- (a)  $a = 4$   
(b) Factors are  $(x - 3)$  and  $(x^2 - x + 1)$
- (a)  $k = 11$ , factors are  $(x - 4)$ ,  $(x + 1)$  and  $(3x - 2)$   
(b) Roots are 4, -1 and  $\frac{2}{3}$
- $5x^2 + 14x - 3$
- $x^2 - 3x - 4$
- $2x^3 - 6x^2 + 2x + 2$