

Mathematics 10D

4.4 – Factoring ax^2+bx+c

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1) $n^2 - 10n + 24$ $\begin{matrix} \textcircled{\times} 24 \\ \textcircled{+} -10 \end{matrix}$ $-6, -4$

$$= \underbrace{n^2 - 6n}_{\text{blue}} - \underbrace{4n + 24}_{\text{purple}}$$

$$= \underbrace{n(n-6)}_{\text{brown}} - \underbrace{4(n-6)}_{\text{brown}}$$

$$= (n-6)(n-4)$$

$$2) \quad 3m^2 - 13m - 30 \quad \begin{matrix} \textcircled{\times} & 3 \times -30 = -90 \\ \textcircled{+} & -13 \end{matrix}$$

$$= \underbrace{3m^2 - 18m}_{\text{red bracket}} + \underbrace{5m - 30}_{\text{red bracket}}$$

$$= 3m(m-6) + 5(m-6)$$

$$= (m-6)(3m+5)$$

$$\begin{array}{l} 1, 90 \\ 2, 45 \\ 3, 30 \\ 5, -18 \end{array}$$

$$3) \quad 5n^2 + 32n + 12$$

$$\begin{array}{l} \textcircled{\times} 60 \\ \textcircled{+} 32 \end{array}$$

$$30, 2$$

$$= 5n^2 + 30n + 2n + 12$$

$$= (5n + 2)(n + 6)$$

$$4) 6p^2 - 11p - 72$$

$$\begin{array}{l} \textcircled{\times} -432 \\ \textcircled{+} -11 \end{array}$$

$$: 6p^2 + 16p - 27p - 72$$

$$y = (2p - 9)(3p + 8)$$

$$y = 6\left(p - \frac{9}{2}\right)\left(p + \frac{8}{3}\right)$$

zeros are $\frac{9}{2}$ and $-\frac{8}{3}$

$$y = a(x-r)(x-s)$$

$$1, 432$$

$$2, 216$$

$$3, 144$$

$$4, 108$$

$$6, 72$$

$$8, 54$$

$$12, 36$$

$$16, -27$$

$$18, 24$$

$$5) 12m^2 + 84m + 135$$

$$= 3(4m^2 + 28m + 45)$$

$\otimes$ 180

$\oplus$ 28

10, 18

$$= 3(\underbrace{4x^2 + 10x}_{\text{purple}} + \underbrace{18x + 45}_{\text{blue}})$$

$$= 3(2x + 9)(2x + 5)$$