

Factor each completely.

1) $16a^2 - 196a + 360$

$= 4(4a^2 - 49a + 90)$

$\frac{4a}{4} = \frac{9}{4}$
 $a = \frac{9}{4}$

$\times 360$
 $+ -49$

$55 \overline{) \frac{9}{4}, 10}$

$= 4(4a^2 - 9a - 40a + 90)$

a
 -10
 $= 4[a(4a - 9) - 10(4a - 9)]$

$= 4(4a - 9)(a - 10)$
 either $4a - 9 = 0$ or $a - 10 = 0$
 $a = \frac{9}{4}$ or $a = 10$

Factor each completely.

2) $20m^2 + 66m - 108 = 0$

$\left\{ \frac{6}{5}, -\frac{9}{2} \right\}$

$2(10m^2 + 33m - 54) = 0$ $\times (-540)$

$2(10m^2 - 12m + 45m - 54) = 0$ $+ (33)$

$2[2m(5m - 6) + 9(5m - 6)] = 0$ $-12, 45$

$2(5m - 6)(2m + 9) = 0$
 either $5m - 6 = 0$ or $2m + 9 = 0$
 $\frac{5m}{5} = \frac{6}{5}$ $m = \frac{6}{5}$ or $2m = -\frac{9}{2}$ $m = -\frac{9}{2}$

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Jump



1-up

Factor each completely.

3) $8a^2 - 2a - 15$

$$= (8a^2 - 12a + 10a - 15) + (-2)$$

$\begin{array}{cc} \text{4a} & 5 \\ -12, 10 \end{array}$

$\times (-120)$

$$= (2a - 3) \left(\frac{4a}{5} + 5 \right)$$

$$4a(2a - 3) + 5(2a - 3) = 0$$

$$(2a - 3)(4a + 5)$$

either $2a - 3 = 0$ or $4a + 5 = 0$

$$\frac{2a}{2} = \frac{3}{2} \quad \text{or} \quad \frac{4a}{4} = \frac{-5}{4}$$

$$a = \frac{3}{2} \quad \quad \quad a = -\frac{5}{4}$$

Factor each completely.

$$4) \frac{6p^3}{p} - \frac{5p^2}{p} - \frac{21p}{p}$$

$$\begin{array}{r} \times - 126 \\ + - 5 \end{array} \quad \begin{array}{l} \text{S.S. of } 7, -3 \\ \hline 3, 2 \end{array}$$

$$= p(6p^2 - 5p - 21)$$

$$9, -14$$

$$= p(6p^2 + 9p - 14p - 21)$$

$$= p[3p(2p+3) - 7(2p+3)]$$

$$= p(2p+3)(3p-7)$$

$$\text{Either } 2p+3=0 \quad \text{or} \quad 3p-7=0$$

$$2p = -3$$

$$3p = +7$$