

Homework 31.3

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Solve each equation by factoring.

1) $(5x + 7)(6x + 5) = 0$

$$\begin{array}{r} 5x + 7 = 0 \\ -7 \quad -7 \\ \hline 5x = -7 \\ \hline 5 \quad 5 \\ x = -\frac{7}{5} \end{array}$$

$$\begin{array}{r} 6x + 5 = 0 \\ -5 \quad -5 \\ \hline 6x = -5 \\ \hline 6 \quad 6 \\ x = -\frac{5}{6} \end{array}$$

3) $n^2 + n - 30 = 0$

$$\begin{array}{r} -30 \\ \hline (n-5)(n+6) = 0 \\ \begin{array}{r} 1 \quad 30 \\ 2 \quad 15 \\ \hline 1 \quad 15 \\ 1 \quad 15 \\ \hline n = -6 \end{array} \end{array}$$

$$\begin{array}{r} n-5 = 0 \\ n+6 = 0 \\ \hline +5 +5 \\ \hline n = 5 \end{array}$$

5) $x^2 = -35 + 12x$

$$\begin{array}{r} +35 \\ \hline -12x \quad -12x \\ \hline x^2 - 12x = -35 \\ \begin{array}{r} +35 \quad +35 \\ \hline x^2 - 12x + 35 = 0 \\ (x - 5)(x - 7) = 0 \end{array} \end{array}$$

$$\begin{array}{r} x - 5 = 0 \\ +5 +5 \\ \hline x = 5 \end{array}$$

$$\begin{array}{r} x - 7 = 0 \\ +7 +7 \\ \hline x = 7 \end{array}$$

Find each product.

7) $(3n - 8)(n + 5)$

$3n^2 + 15n - 8n - 40$

$3n^2 + 7n - 40$

2) $(8p - 5)(p + 3) = 0$

$$\begin{array}{r} 8p - 5 = 0 \\ +5 \quad +5 \\ \hline 8p = 5 \\ \hline 8 \quad 8 \\ p = \frac{5}{8} \end{array}$$

$$\begin{array}{r} p + 3 = 0 \\ -3 \quad -3 \\ \hline p = -3 \end{array}$$

4) $m^2 + 14m + 48 = 0$

$$\begin{array}{r} +48 \\ \hline 1 \quad 48 \\ (m+6)(m+8) = 0 \\ \begin{array}{r} 1 \quad 24 \\ 2 \quad 12 \\ 3 \quad 16 \\ 4 \quad 12 \\ \hline 1 \quad 16 \\ 1 \quad 16 \\ \hline m = -8 \end{array} \end{array}$$

$$\begin{array}{r} m+6 = 0 \\ m+8 = 0 \\ \hline -6 \quad -6 \\ \hline m = -8 \end{array}$$

$$\begin{array}{r} +6 \quad +8 \\ \hline \end{array}$$

6) $r^2 = 8r - 15$

$$\begin{array}{r} +15 \\ \hline -8r \quad -8r \\ \hline r^2 - 8r = -15 \\ \begin{array}{r} +15 \quad +15 \\ \hline r^2 - 8r + 15 = 0 \\ (r - 3)(r - 5) = 0 \end{array} \end{array}$$

$$\begin{array}{r} r - 3 = 0 \\ +3 \quad +3 \\ \hline r = 3 \end{array}$$

$$\begin{array}{r} r - 5 = 0 \\ +5 \quad +5 \\ \hline r = 5 \end{array}$$

8) $(5b - 3)(4b + 6)$

$20b^2 + 30b - 12b - 18$

$20b^2 + 18b - 18$

Answers to Homework 31.3

1) $\left\{-\frac{7}{5}, -\frac{5}{6}\right\}$

2) $\left\{\frac{5}{8}, -3\right\}$

5) $\{5, 7\}$

6) $\{5, 3\}$

3) $\{5, -6\}$

4) $\{-8, -6\}$

7) $3n^2 + 7n - 40$

8) $20b^2 + 18b - 18$