

Homework 28.2

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Factor each completely.

1)
$$2x^2 + 5x - 12 \quad \begin{array}{r} -24 \\ \hline 1 & 24 \end{array}$$

$$\begin{array}{r} 2(-12) \\ 2x^2 - 3x + 8x - 12 \\ \hline x(2x-3) + 4(2x-3) \end{array} \quad \begin{array}{r} -3x + 8x \\ \hline 4 & 6 \end{array}$$

$$(2x-3)(x+4)$$

3)
$$3k^2 + 13k + 12 \quad \begin{array}{r} +36 \\ \hline 1 & 36 \\ 2 & 18 \end{array}$$

$$\begin{array}{r} 3k^2 + 4k + 9k + 12 \\ \hline k(3k+4) + 3(3k+4) \end{array} \quad \begin{array}{r} 3 & 12 \\ +4k + 9k \\ \hline 6 \end{array}$$

$$(3k+4)(k+3)$$

5)
$$4b^2 + 15b + 9 \quad \begin{array}{r} +36 \\ \hline 1 & 36 \\ 2 & 18 \end{array}$$

$$\begin{array}{r} 4b^2 + 3b + 12b + 9 \\ \hline b(4b+3) + 3(4b+3) \end{array} \quad \begin{array}{r} +3b + 12b \\ \hline 4 & 9 \\ 6 & 6 \end{array}$$

$$(4b+3)(b+3)$$

2)
$$5n^2 - 29n + 20 \quad \begin{array}{r} +100 \\ \hline 1 & 100 \\ 2 & 50 \\ \hline -4n - 25n \\ 5 & 20 \\ \hline 10 & 10 \end{array}$$

$$\begin{array}{r} 5(20) \\ 5n^2 - 4n - 25n + 20 \\ \hline n(5n-4) - 5(5n-4) \\ (5n-4)(n-5) \end{array}$$

4)
$$4x^2 + 20x + 21 \quad \begin{array}{r} +84 \\ \hline 1 & 84 \\ 2 & 42 \\ 3 & 28 \\ 4 & 21 \\ \hline +6x + 14x \\ 7 & 12 \end{array}$$

$$\begin{array}{r} 4(21) \\ 4x^2 + 6x + 14x + 21 \\ \hline 2x(2x+3) + 7(2x+3) \\ (2x+3)(2x+7) \end{array}$$

6)
$$6x^2 - 35x - 6 \quad \begin{array}{r} -36 \\ \hline +1x & -36x \\ 2 & 18 \\ 3 & 12 \\ 4 & 9 \\ 6 & 6 \end{array}$$

$$\begin{array}{r} 6(-6) \\ 6x^2 + 1x - 36x - 6 \\ \hline x(6x+1) - 6(6x+1) \\ (6x+1)(x-6) \end{array}$$

Solve each system by substitution.

7)
$$\begin{array}{l} 2x + 4y = 22 \\ y = -5x + 10 \end{array}$$

$$2x + 4(-5x + 10) = 22$$

$$2x - 20x + 40 = 22$$

$$\begin{array}{r} -18x + 40 = 22 \\ -40 -40 \\ \hline -18x = -18 \\ -18 \quad 18 \end{array}$$

$$x = 1$$

$$y = -5(1) + 10$$

$$y = -5 + 10$$

$$y = 5$$

$$(1, 5)$$

8)
$$\begin{array}{l} y = 3x - 13 \\ -2x + 6y = -14 \end{array}$$

$$-2x + 6(3x - 13) = -14$$

$$-2x + 18x - 78 = -14$$

$$\begin{array}{r} 16x - 78 = -14 \\ +78 +78 \\ \hline 16x = 64 \end{array}$$

$$x = 4$$

$$y = 3(4) - 13$$

$$y = 12 - 13$$

$$y = -1$$

$$(4, -1)$$

Answers to Homework 28.2

1) $(2x - 3)(x + 4)$
5) $(b + 3)(4b + 3)$

2) $(5n - 4)(n - 5)$
6) $(x - 6)(6x + 1)$

3) $(3k + 4)(k + 3)$
7) $(1, 5)$

4) $(2x + 7)(2x + 3)$
8) $(4, -1)$