

# Test Review Key

① (a)  $\mathbb{R} - \{2\}$

(b)  $x^2 - 4 = 0$   
 $(x+2)(x-2) = 0$   
 $x = \pm 2$

$\mathbb{R} - \{\pm 2\}$

(c)  $x^2 - x - 6 = 0$   
 $(x-3)(x+2) = 0$   
 $x = 3 \text{ or } -2$

$\mathbb{R} - \{-2, 3\}$

(d)  $\begin{array}{r} \downarrow 1 \quad -3 \quad -6 \quad 8 \\ \quad \quad 1 \quad -2 \quad -8 \\ \hline 1 \quad -2 \quad -8 \quad 0 \end{array}$

$(x-1)(x^2 - 2x - 8) = 0$

$(x-1)(x-4)(x+2) = 0$

$x = -2, 1, \text{ or } 4$

$\mathbb{R} - \{-2, 1, 4\}$

(e)  $\begin{array}{r} \downarrow 1 \quad 1 \quad -8 \quad -12 \\ \quad \quad 1 \quad 2 \quad -6 \\ \hline 1 \quad 2 \quad -6 \quad -18 \end{array}$

$\begin{array}{r} \downarrow 1 \quad 1 \quad -8 \quad -12 \\ \quad \quad -1 \quad 0 \quad 8 \\ \hline 1 \quad 0 \quad -8 \quad -4 \end{array}$

$\begin{array}{r} 2 \downarrow 1 \quad 1 \quad -8 \quad -12 \\ \quad \quad 2 \quad 6 \quad -4 \\ \hline 1 \quad 3 \quad -2 \quad -16 \end{array}$

$\begin{array}{r} -2 \downarrow 1 \quad 1 \quad -8 \quad -12 \\ \quad \quad -2 \quad 2 \quad 12 \\ \hline 1 \quad -1 \quad -6 \quad 0 \end{array}$

$(x+2)(x^2 - x - 6) = 0$

$(x+2)(x-3)(x+2) = 0$

$x = -2, 3$

$\mathbb{R} - \{-2, 3\}$

(f)  $\begin{array}{r} \downarrow 1 \quad 12 \quad 47 \quad 60 \\ \quad \quad -1 \quad 71 \quad -36 \\ \hline 1 \quad 11 \quad 36 \quad 24 \end{array}$

$\begin{array}{r} -2 \downarrow 1 \quad 12 \quad 47 \quad 60 \\ \quad \quad -2 \quad -20 \quad -54 \\ \hline 1 \quad 10 \quad 27 \quad 6 \end{array}$

$\begin{array}{r} -3 \downarrow 1 \quad 12 \quad 47 \quad 60 \\ \quad \quad -3 \quad -27 \quad -60 \\ \hline 1 \quad 9 \quad 20 \quad 0 \end{array}$

$(x+3)(x^2 + 9x + 20) = 0$

$(x+3)(x+4)(x+5) = 0$

$x = -5, -4, -3$

$\mathbb{R} - \{-5, -4, -3\}$

(x-1)

