Sec. 3.2 7, 10, 12, 17, 20, 24, 25, 28, 32, 40, 43, 48, 53, 54, 56, 60, 61

7) 8 | 1 -7 -20 96
8 8 -96
1 1 -12 | 0 → $x^2 + x - 12 = 0$
$(x+4)(x-3) = 0$

→ $\boxed{x = 8, -4, 3}$

→ 10) -3 | 2 -10 -28 66
-6 48 -60
2 -16 20 | 0 → $2x^2 - 16x + 20 = 0$

→ $x = \frac{16 \pm \sqrt{256 - 160}}{4}$

$x = 4 \pm \sqrt{6}$

→ $\boxed{x = -3, 4 \pm \sqrt{6}}$

12) -1 | 6 7 -1 -2 0 → $x(6x^2 + x - 2)$
-6 -1 2 0
6 1 -2 6 | 0

$x = \frac{-1 \pm \sqrt{1 + 48}}{12}$

$x = \frac{-1 \pm 7}{12}$

→ $\boxed{x = -1, 0, \frac{-1 \pm 7}{12}}$

17) $x = -3$ looks like a solution.

-3 | 1 3 -8 -24
-3 0 24
1 0 -8 | 0 → $x^2 - 8 = 0$

→ $x = \pm\sqrt{8}$

→ $\boxed{x = -3, \pm 2\sqrt{2}}$

20) $x=1$ looks like a solution.

1	2	1	−8	5
		2	3	−5
	2	3	−5	0

$\rightarrow 2x^2+3x-5=0$

$x=\frac{-3\pm\sqrt{9+40}}{4}=\frac{-3\pm 7}{4}$

$=1,-\frac{5}{2}$

$\rightarrow \boxed{x=1,1,-\frac{5}{2}}$

$\rightarrow$ 24) $x(x+3)(x-\frac{5}{3})$

25) $(x^2-5)(x^2-2)=(x-\sqrt{5})(x+\sqrt{5})(x-\sqrt{2})(x+\sqrt{2})$

28) $x=-6$ looks like a solution.

−6	1	10	14	−60
		−6	−24	60
	1	4	−10	0

$\rightarrow x^2+4x-10=0$

$x=\frac{-4\pm\sqrt{16+40}}{2}=-2\pm\sqrt{14}$

$\rightarrow \boxed{x=-6,-2\pm\sqrt{14}}$

$\rightarrow$ 32) $x=\pm 3$ look like solutions

3	1	2	−5	−18	−36
		3	15	30	36
−3	1	5	10	12	0
		−3	−6	−12	
	1	2	4	0	

$\rightarrow x^2+2x+4=0 \Rightarrow x=\frac{-2\pm\sqrt{4-16}}{2}$ ← no other solutions

$\rightarrow \boxed{x=3,-3}$

40) $(x^2-5x-6)(x^2+8)=0$

$\swarrow$ $\approx$ no solutions

$=(x-6)(x+1) \rightarrow \boxed{x=6,-1}$

43) $(x^2)^2+13(x^2)+36=0 \rightarrow x^2=\frac{-13\pm\sqrt{169-144}}{2}=\frac{-13\pm5}{2}$

$=-4,-9$

$\hookrightarrow =(x^2+4)(x^2+9) \rightarrow$ no solutions

48) $x=6$ looks like a solution.

6 | 1 2 -41 -42 $\rightarrow x^2+8x+7=6$

6 48 42 $(x+7)(x+1)=0$

1 8 7 | 0

$\rightarrow \boxed{x=-7,-1,6}$

53) $-4(x+2)(x-\frac{1}{2})(x-4)$

$\rightarrow$ 54) $3x(x+\frac{2}{3})(x-5)$

56) $5(x-\frac{1}{5})(x-7)^2$

$\rightarrow$ 60) $a(x-1)^2(x+1)^2 \rightarrow 4=a(2-1)^2(2+1)^2=9a$

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

$\rightarrow \boxed{\frac{9}{4}(x-1)^2(x+1)^2}$

61) $a(x+4)(x-1)(x-4) \rightarrow -8=a(0+4)(0-1)(0-4)=16a$

$\rightarrow a=-\frac{1}{2}$

$\rightarrow \boxed{-\frac{1}{2}(x+4)(x-1)(x-4)}$