1) $(x+2)(x-6)=0$
$x+2=0$ or $x-6=0$
$\underline{x=-2}$ $\underline{x=6}$

2) $b^2+7b=0$ $\left.\right\}$ $\underline{b=0}$ or $b+7=0$
$b(b+7)=0$ $\left.\right\}$ $\underline{b=-7}$

3) $3y^2+8y-35=0$
$(3y-7)(y+5)=0$
$3y-7=0$ or $y+5=0$
$3y=7$ $\underline{y=-5}$
$y=7/3$

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4) $(3b+2)^2 = (3b+2)(3b+2)$
$= 9b^2+6b+6b+4$
$= 9b^2+12b+4$
$= (3b)^2+2(6b)+(2)^2$

5) $(6x-5)(6x+5)=36x^2-25$ ☺

6) $(3x+2y)(5x-5y)=15x^2-15xy+10xy-10y^2$
$= 15x^2-5xy-10y^2$

7) $m^2+m-42 = (m \quad 6)(m \quad 7)$
$(m-6)(m+7)$
$+7m-6m = +m$

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8) $20y^3+42y^2-20y$
$2y(10y^2+21y-10)$
$2y(2y+5)(5y-2)$
$\begin{array}{c}42 \\ 2\cdot21 \\ 3\cdot7\end{array}$ $\begin{array}{c}20 \\ 2\cdot10 \\ 25\end{array}$

9) $49x^2-9 = (7x+3)(7x-3)$

10) $x^3-9xy^2+2x^2-18y^2$
$x(x^2-9y^2)+2(x^2-9y^2) \rightarrow x^2-(3y)^2$
$(x+2)(x^2-9y^2)$
$(x+2)(x-3y)(x+3y)$

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11) $(5x+1)\cdot(2x^2-4x-6)$
$10x^3-20x^2-30x$
$\underline{+2x^2-4x-6}$
$10x^3-18x^2-34x-6$

12) $\dfrac{6a^3}{5b^2}\cdot\dfrac{3a^5}{b^2} \Rightarrow \dfrac{18a^8}{5b^4}$

13) $\dfrac{x+2}{x^3-7x^2+12x}$
$x^3-7x^2+12x=0$
$x(x^2-7x+12)=0$
$x(x-4)(x-3)=0$
$\underline{x=0}$ or $x-4=0$ or $x-3=0$
$\underline{x=4}$ $\underline{x=3}$

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14) $\dfrac{2x(x-3)}{-(2x^2+2x-24)}$ $\left\{\dfrac{2x(x-3)}{(3-x)(8+2x)}\right.$
$\dfrac{2x(x-3)}{-(2x+8)(x-3)}$ $\dfrac{2x(x-3)}{-(x-3)(2x+8)}$
$\dfrac{-2x}{2x+8}$ $\dfrac{-2x}{2x+8}$

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15) $\dfrac{(x+5)(x-4)}{(x-4)(x+9)} \cdot \dfrac{(x+9)(x-3)}{(x-8)(x+5)}$
$\dfrac{x-3}{x-8}$

16) $3b^2-4b-1$ (can't factor)

17) $\dfrac{2x-1}{(x-8)(x+6)} + \dfrac{x+2}{(x-8)}\dfrac{(x+6)}{(x+6)}$
$\dfrac{2x-1 + x^2+6x+2x+12}{(x-8)(x+6)} \Rightarrow \dfrac{x^2+10x+11}{(x-8)(x+6)}$

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18) $\dfrac{6}{(b-5)(b-2)} - \dfrac{b+2}{(b-5)}\dfrac{(b-2)}{(b-2)}$

$\dfrac{6}{(b-2)(b-5)} + \dfrac{-(b^2-4)}{(b-5)(b-2)}$

$\dfrac{6-b^2+4}{(b-5)(b-2)}$

$\dfrac{10-b^2}{(b-5)(b-2)}$

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