Algebra

Have a look at these and see how far you can get. Anything you're not sure about I can go through, but this should make it easier to gauge what we can assume is known and what to reinforce. In each case the idea is to get either a value for X (if all numerical) or an expression for X (i.e. X=…)

$X+1 = 2$	$X+4 = 5$	$3+X = 7$	$X+12 = 5$
$X-8 = 1$	$X-9 = 3$	$X-2 = -4$	$15-X = 6$
$7-X = 11$	$2X = 4$	$8X = 40$	$2.5X = 12.5$
$X/3 = 2$	$X/7 = 5$	$X/1.5 = 4$	$X/0.5 = 1$
$3/X = 1$	$8/X = 4$	$9/X = 3$	$4/X = 3$
$2X+1 = 5$	$(X/2)-3 = 7$	$2(X+1) = 18$	$4(X-1)+2 = 6$
$X^2=4$	$X^3=8$	$X^2+3 = 12$	$(X-1)^2 = 16$
$(3-X)^2-7 = 18$	$\text{sqrt}(X) = 3$	$\text{sqrt}(X-2) = 2$	$\text{sqrt}(5+X^2) = 3$
$\exp(X) = \exp(4)$	$\ln(X) = 0.6918$	$3\exp(X) = 1.2$	$2+\exp(4X) = 5$
$2X+1 = X-3$	$2X^2 = X^2+9$	$\exp(X+1) = \exp(Y)$	$\exp(X^2) = \exp(Y)$
$X+3 = Y$	$2X = Z$	$2X-2 = Y-6$	$X^2-1 = Y+2$
$(X-1)^2-3 = (Y^2)$	$\text{sqrt}(X^2+4) = Y+Z$	$\exp(2X-2) = Y$	$\ln(3X) = Y+2$
$\exp(2/X) = 2Y$	$(X+3) = Y(X-1)$	$X-1 = YX/2$	$(2X+4)Y=(X-2)Y+1$

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Algebra Solutions

The top line gives the final solution, then beneath in brackets are the operations to be performed (on both sides) on the original equation to reach the solution.

X=1 (-1)	X=1 (-4)	X=4 (-3)	X=7 (-12)
X=9 (+8)	X=12 (+9)	X=-2 (+2)	X=9 (+X,-6)
X=-4 (+X,-11)	X=2 (/2)	X=5 (/8)	X=5 (/2.5)
X=6 (*3)	X=35 (*7)	X=6 (*1.5)	X=0.5 (*0.5)
X=3 (*X)	X=2 (*X,/4)	X=3 (*X,/3)	X=4/3 (*X,/3)
X=2 (-1,/2)	X=20 (+3,*2)	X=8 (/2,-1)	X=2 (-2,/4,+1)
X=2 (sqrt)	X=2 (cube root)	X=3 (-3,sqrt)	X=5 (sqrt,+1)
X=-2 (+7,sqrt,+X,-5)	X=9 (^{2})	X=6 (^{2},+2)	X=2 (^{2},-5,sqrt)
X=4 (ln)	X=2 (exp)	X=-0.92 (/3,ln)	X=0.275 (-2,ln,/4)
X=-4 (-X,-1)	X=3 (-X^2,sqrt)	X=Y-1 (ln,-1)	X=sqrt(Y) (ln,sqrt)
X=Y-3 (-3)	X=Z/2 (/2)	X=(Y-4)/2 (+2,/2)	X=sqrt(Y+3) (+1,sqrt)
X=sqrt(Y^2+3)+1 (+3,sqrt,+1)	X=sqrt[(Y+Z)^2-4] (^{2},-4,sqrt)	X=[ln(Y)+2]/2 (ln,+2,/2)	X=[exp(Y+2)]/3 (exp,/3)
X=2/[ln(2Y)] (ln,*X,/ln(2Y))			

The last three are more complex, so will be approached step-by-step.

(X+3) = Y(X-1)	
(X+3) = YX-Y	Expanding bracket on right
X-YX+3 = Y	Subtract YX
X-YX = Y-3	Subtract 3
X(1-Y) = (Y-3)	Simplify left side with brackets
X = (Y-3)/(1-Y)	Divide by (1-Y)

X-1 = YX/2	
2X-2 = YX	Multiply by 2
2X-YX -2 = 0	Subtract YX
2X-YX = 2	Add 2
X(2-Y) = 2	Simplify
X = 2/(2-Y)	Divide by (2-Y)

(2X+4)Y=(X-2)Y +1	
2XY+4Y = XY-2Y+1	Expand brackets
XY+4Y = -2Y+1	Subtract XY
XY = -6Y+1	Subtract 4Y
X = (-6Y+1)/Y	Divide by Y

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