Worksheet #13 Section 2.4 — Symbolic Linear Equations

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Solve each equation for the indicated variable.

(1) $a\,x = d$ for x

(2) $a - x = d$ for x

(3) $3\,x = b$ for x

(4) $a - s = b$ for s

(5) $2\,z + 2 = z + 1$

(6) $a\,x = 3$ for x

(7) $x - a = 5$ for x

(8) $x\,y = z$ for y

(9) $a - y = c$ for y

(10) $\frac{1}{2}\,z = b$ for z

(11) $a\,y - c = b$ for y

(12) $a\,z = a - 1$ for z

(13) $a\,(x - 1) = b$ for x

(14) $\frac{a}{x} = b$ for x

(15) $y = m\,x + b$ for x

(16) $a\,b = c\,d$ for d

(17) $a\,(x - b) = a$ for x

(18) $\frac{1}{2}\,x = c$ for x

(19) $2\,s - \frac{a}{b} = 3$ for s

(20) $a\,x + 1 = b$ for a

(21) $a - a\,x = b$ for x

(22) $a + b = c + d$ for c

(23) $-\,(x - a) = x + b$ for x

(24) $2\,a + x = 2\,c$ for x

(25) $2 - a\,x = 2 - a$ for x

(26) $a\,(b + c) = d$ for b

(27) $a\,A = b$ for A

(28) $P = 2\,L + 2\,W$ for L

(29) $a\,x = b\,x$ for x

(30) $2\,L + 2\,W = P$ for W

(31) $3\,x - b = \frac{1}{2}$ for x

(32) $a\,b\,d = c$ for b

(33) $y = m\,x + b$ for b

(34) $F = m\,a$ for m

(35) $a\,x + b\,y = c$ for y

(36) $1 + x = x + 2$

(37) $\dfrac{x-a}{b}=1$ for x

(38) $y-z=x$ for z

(39) $s+z=t$ for z

(40) $y-3=2\,(x-1)$ for y

(41) $y+1=3\,(x-2)$ for x

(42) $3\,x+2=2\,x-3\,y$ for x

(43) $y=3\,x-b$ for b

(44) $a+b=c$ for b

(45) $A=L\,W$ for L

(46) $A=\dfrac{1}{2}\,b\,h$ for b

(47) $2\,x-3\,y=5$ for x

(48) $8\,x+3\,y=2$ for y

(49) $3\,(x-2)=2\,(y+1)$ for x

(50) $x\,(a+b)=c$ for c

(51) $a\,x-b\,x=c$ for x

(52) $f=\dfrac{1}{2}\,(c-1)$ for c

(53) $a\,x=b\,x+a$ for x

(54) $2\,(a+b)=a\,c$ for a

(55) $2\,(a-2)=3\,(b-1)$ for b

(56) $x\,(a+b)=x+1$ for x

(57) $a\,(x+y)=b\,(x+y)$ for y

(58) $x+2=a\,x+y$ for x

(59) $a-a\,(b+c)=3$ for a

(60) $3\,(x+a)=x$ for x

(61) $\dfrac{2\,a-1}{3\,b-1}=2$ for b

(62) $\dfrac{a\,x}{b}=\dfrac{a}{c}$ for x

(63) $a\,b+c\,d=a\,d+b\,c$ for c

(64) $(a+b)\,(x+y)=1$ for x

(65) $a\,y+b=c\,y-d$ for y

(66) $m\,x+b=n\,x+c$ for x

(67) $T=C+10\,(B-A)$ for A

(68) $x\,(a-b)=m\,(x-c)$ for x

(69) $\dfrac{x}{a}=\dfrac{a}{b}$ for x

(70) $A=\dfrac{1}{2}\,h\,(b_1+b_2)$ for h

(71) $x\,(a-b)=m\,(x-c)$ for x

(72) $\dfrac{a}{b}=\dfrac{c}{d}$ for d

(73) $a=\dfrac{1}{b}+\dfrac{1}{c}$ for b

(74) $c\,(z-b)=b+c$ for z

(75) $A=\dfrac{1}{2}\,(b+B)\,h$ for h

(76) $y-a=m\,(x-b)$ for x

(77) $A = \dfrac{1}{2}\,(b + B)\;h$ for B

(78) $x\,(a + b) = a + c$ for x

(79) $x\,(a + b) = c + d$ for x

(80) $\dfrac{a}{b} + \dfrac{c}{d} = 0$ for c

(81) $\dfrac{x}{a} + \dfrac{y}{b} = 1$ for y

(82) $a - b - c = a\,b$ for b

(83) $a\,b + b\,c = c\,d$ for c

(84) $\dfrac{1}{R} = \dfrac{1}{r_1} + \dfrac{1}{r_2}$ for r_1

Answers: (1) $x = \frac{d}{a}$ (2) $x = -d + a$ (3) $x = \frac{b}{3}$ (4) $s = -b + a$ (5) $z = -1$ (6) $x = \frac{3}{a}$

(7) $x = a + 5$ (8) $y = \frac{z}{x}$ (9) $y = -c + a$ (10) $z = 2\,b$ (11) $y = \frac{c + b}{a}$ (12) $z = \frac{a - 1}{a}$

(13) $x = \frac{b + a}{a}$ (14) $x = \frac{a}{b}$ (15) $x = \frac{y - b}{m}$ (16) $d = \frac{a\,b}{c}$ (17) $x = b + 1$ (18) $x = 2\,c$

(19) $s = \frac{\frac{a}{b} + 3}{2}$ (20) $a = \frac{b - 1}{x}$ (21) $x = -\frac{b}{a} + 1$ (22) $c = -d + b + a$ (23) $x = \frac{-b + a}{2}$

(24) $x = 2\,c - 2\,a$ (25) $x = 1$ (26) $b = \frac{d}{a} - c$ (27) $A = \frac{b}{a}$ (28) $L = \frac{-2\,W + P}{2}$ (29) $x = 0$

(30) $W = \frac{P - 2\,L}{2}$ (31) $x = \frac{2\,b + 1}{6}$ (32) $b = \frac{c}{a\,d}$ (33) $b = y - m\,x$ (34) $m = \frac{F}{a}$

(35) $y = \frac{-a\,x + c}{b}$ (36) No Solution (37) $x = b + a$ (38) $z = y - x$ (39) $z = t - s$

(40) $y = 2\,x + 1$ (41) $x = \frac{y + 7}{3}$ (42) $x = -3\,y - 2$ (43) $b = -y + 3\,x$ (44) $b = c - a$

(45) $L = \frac{A}{W}$ (46) $b = \frac{2\,A}{h}$ (47) $x = \frac{3\,y + 5}{2}$ (48) $y = \frac{-8\,x + 2}{3}$ (49) $x = \frac{2\,(y + 4)}{3}$

(50) $c = (b + a)\,x$ (51) $x = \frac{c}{-b + a}$ (52) $c = 2\,f + 1$ (53) $x = \frac{a}{-b + a}$ (54) $a = \frac{2\,b}{c - 2}$

(55) $b = \frac{2\,a - 1}{3}$ (56) $x = \frac{1}{b + a - 1}$ (57) $y = -x$ (58) $x = \frac{-y + 2}{a - 1}$ (59) $a = \frac{-3}{c + b - 1}$

(60) $x = \frac{-3\,a}{2}$ (61) $b = \frac{2\,a + 1}{6}$ (62) $x = \frac{b}{c}$ (63) $c = a$ (64) $x = -y + \frac{1}{b + a}$ (65) $y = \frac{d + b}{c - a}$

(66) $x = \frac{-c + b}{n - m}$ (67) $A = \frac{-T + C + 10\,B}{10}$ (68) $x = \frac{c\,m}{m + b - a}$ (69) $x = \frac{a^2}{b}$ (70) $h = \frac{2\,A}{b_2 + b_1}$

(71) $x = \frac{c\,m}{m + b - a}$ (72) $d = \frac{b\,c}{a}$ (73) $b = \frac{c}{a\,c - 1}$ (74) $z = \frac{b}{c} + b + 1$ (75) $h = \frac{2\,A}{B + b}$

(76) $x = \frac{y + b\,m - a}{m}$ (77) $B = \frac{2\,A}{h} - b$ (78) $x = \frac{c + a}{b + a}$ (79) $x = \frac{d + c}{b + a}$ (80) $c = -\frac{a\,d}{b}$

(81) $y = -\frac{b\,x}{a} + b$ (82) $b = \frac{-c + a}{a + 1}$ (83) $c = \frac{a\,b}{d - b}$ (84) $r_1 = \frac{r_2 R}{R - r_2}$