CLOSURE

- { positive integers } under addition   Closed

- { negative integers } under subtraction   NOT closed

  $-2 + {}^+4 = 2$

1) { negative integers } under addition   Closed

   $-7 + -4 = -11$

2) { reals } under square root   not closed

3) { positive reals } under subtraction   not closed

   $6 - 7 = -1$

4) { non-negative reals } under division   not closed

   $\#/0$

5) { integers } under multiplication   closed

Section 1.1

Solve for t:

① $5t - (3 + 4t) = 17 + 2(8 - 3t)$

$5t - 3 - 4t = 17 + 16 - 6t$

$t - 3 = 33 - 6t$

$7t = 36$

$t = 36/7$

② $[0.38(t + 4) - 0.15(2t - 6) = 0.83(5 - 2t)] \cdot 100$

$38(t + 4) - 15(2t - 6) = 83(5 - 2t)$

$38t + 152 - 30t + 90 = 415 - 166t$

$8t + 242 = 415 - 166t$

$$\begin{array}{r} \cancel{415} \\ \underline{242} \\ 173 \end{array}$$

$174t = 173$

$$t = 173/174$$

③ $\left[\dfrac{t + 6}{2} - \dfrac{2t - 3}{8} = \dfrac{3t + 5}{4}\right] \cdot \dfrac{8}{1}$

$\dfrac{8(t + 6)}{2} - \dfrac{8(2t - 3)}{8} = \dfrac{8(3t + 5)}{4}$

$4(t + 6) - (2t - 3) = 2(3t + 5)$

You try! Solve for x:

④ $\left[\dfrac{17x+3}{5} - \dfrac{2x+7}{15} = \dfrac{3x+4}{5}\right] \cdot 15$

$$3(17x+3) - (2x+7) = 3(3x+4)$$

$$51x+9 - 2x-7 = 9x+12$$

$$40x = 10$$

$$x = 1/4$$

⑤ $\left[0.787(x-1) + 0.123(x+2) = 0.256(x+1)\right] \cdot 1000$

$$787(x-1) + 123(x+2) = 256(x+1)$$

$$787x - 787 + 123x + 246 = 256x + 256$$

$$654x = 797$$

$$x = \dfrac{797}{654}$$

Rewrite the equation for the indicated variable.

⑦ $3Ac + 2Ab = 14b \quad ; A$

$$\dfrac{A(3c+2b)}{3c+2b} = \dfrac{14b}{3c+2b}$$

$$A = \dfrac{14b}{3c+2b}$$

⑧ $\dfrac{1}{R} = \dfrac{1}{R_1} + \dfrac{1}{R_2} \quad ; R_1$

$$\dfrac{1}{R} = \dfrac{1}{R_1} - \dfrac{1}{R_2}$$

$$\dfrac{1}{R_1} = \dfrac{R_2 - R}{R \cdot R_2}$$

$$\frac{1}{R_1} = \frac{1}{R} - \frac{1}{R_2}$$

$$\frac{1}{R_1} = \frac{R_2}{R \cdot R_2} - \frac{R}{R \cdot R_2}$$

$$R_1 = \frac{R \cdot R_2}{R_2 - R}$$

Find 3 consecutive even numbers so that the third is $\frac{4}{3}$ the first.

$$2X, 2x+2, 2x+4$$

$$2x+4 = \frac{4}{3} \cdot 2x$$

$$2x+4 = \frac{8x}{3}$$

$$6x+12 = 8x$$

$$= 2x$$

$$6 = x$$

$$12, 14, 16$$