Review

solve: $3x+36=x^2-6x$

$0=x^2-9x-36$

$0=(x-12)(x+3)$

$x=12,-3$

6.6 Literal Equations

Wed HW: 6.1, 6.2, 6.3, 6.4

6. $A=\frac{1}{2}bh$; h

$\frac{A}{\frac{1}{2}b} = \frac{\cancel{\frac{1}{2}b}h}{\cancel{\frac{1}{2}b}}$

$\boxed{h=\frac{A}{\frac{1}{2}b}} = \frac{A}{b}\cdot\frac{2}{1} = \frac{2A}{b}$

$\boxed{h=\frac{2A}{b}}$

10. $S = V_0 t - 16t^2$; V_0

$$\frac{S + 16t^2}{t} = \frac{V_0 \cancel{t}}{\cancel{t}}$$

$$\boxed{V_0 = \frac{S + 16t^2}{t}}$$

16. $P = \frac{R - C}{n}$; R

$Pn = R - C$

$$\boxed{Pn + C = R}$$

20. $X = ax + b \quad ; X$

$$X - ax = b$$

$$\frac{x(\cancel{1-a})}{\cancel{1-a}} = \frac{b}{1-a}$$

$$\boxed{x = \frac{b}{1-a}}$$

22. $y - y_1 = m(x - x_1) \quad ; X$

$$\frac{y-y_1}{m} = x - x_1$$

$$\boxed{\frac{y-y_1}{m} + x_1 = X}$$

$$24.\ ax\cdot\left(\frac{1}{x}+\frac{1}{a}\right)=(b)\cdot ax \quad ;x$$

$$\cancel{\frac{ax}{ax}\cdot\frac{1}{x}+\frac{1}{a}\cdot\frac{ax}{ax}=b\cdot\frac{ax}{ax}}$$

$$\frac{a\cancel{x}}{1}\cdot\frac{1}{\cancel{x}}+\frac{\cancel{a}x}{1}\cdot\frac{1}{\cancel{a}}=b\cdot\frac{ax}{1}$$

$$a+x=abx$$

$$a=abx-x$$

$$a=x(ab-1)$$

$$\boxed{\frac{a}{ab-1}=x}$$

$$26.\ a(a-x)=b(b-x) \quad ;x$$

$$a^2-ax=b^2-bx$$

$$bx-ax=b^2-a^2$$

$$x(b-a)=b^2-a^2$$

$$x=\frac{b^2-a^2}{b-a}=\frac{\cancel{(b-a)}(b+a)}{\cancel{b-a}}$$

$$a^2-b^2=ax-bx$$

$$a^2-b^2=x(a-b)$$

$$x=\frac{a^2-b^2}{a-b}=\frac{\cancel{(a-b)}(a+b)}{\cancel{a-b}}$$

$$\boxed{x=b+a}$$

34. $V = \dfrac{V_1 + V_2}{1 + \dfrac{V_1 V_2}{C^2}}$; V_1

$\dfrac{c^2}{c^2}\cdot$

$V = \dfrac{V_1 + V_2}{\left(\dfrac{C^2 + V_1 V_2}{C^2}\right)} \cdot \left(\dfrac{C^2}{C^2+V_1V_2}\right) \quad V = \dfrac{(V_1 + V_2)\,C^2}{(C^2 + V_1 V_2)}$

$V(C^2 + V_1 V_2) = (V_1 + V_2)C^2$

$VC^2 + VV_1V_2 = V_1C^2 + V_2C^2$

$VV_1V_2 - V_1C^2 = V_2C^2 - VC^2$

$V_1(VV_2 - C^2) = V_2C^2 - VC^2$

$\boxed{V_1 = \dfrac{V_2C^2 - VC^2}{VV_2 - C^2}}$

6.6 HW:

5-25 odd

7.1 Rational Exponents & Radical Expressions

$m, n \in \mathbb{Z}^+$ (positive integers) ; $a^{1/n} \in \mathbb{R}$ (real)

1. $a^{m/n} = (a^m)^{\frac{1}{n}} = \left(a^{\frac{1}{n}}\right)^m$

$a \in \mathbb{R}$; $n \in \mathbb{Z}^+$

2. $a^{\frac{1}{n}} = \sqrt[n]{a}$

"n^{th} root of a" is the number that when raised to the n^{th} power (multiplying it by itself n times) equals a.

$a^{1/n} \in \mathbb{R}$

$$a^{\frac{m}{n}} = \begin{cases} (a^m)^{\frac{1}{n}} = \sqrt[n]{a^m} \\ \left(a^{\frac{1}{n}}\right)^m = \left(\sqrt[n]{a}\right)^m \end{cases}$$

* numerator of exponent stays an exponent, denominator is a root

special case:

$$\cancel{\sqrt[n]{a^n} = a^{\frac{n}{n}} = a^1 = a}$$

$$\sqrt[n]{a^n} = \begin{cases} a, & \text{if } n \text{ is odd} \\ |a|, & \text{if } n \text{ is even} \end{cases}$$

$\sqrt[3]{2^3} = \sqrt[3]{8} = 2$

$\sqrt[3]{(-2)^3} = \sqrt[3]{-8} = -2$

$$\left.\begin{aligned} \sqrt[2]{2^2} &= \sqrt[2]{4} = 2 \\ \sqrt[2]{(-2)^2} &= \sqrt[2]{4} = 2 \end{aligned}\right\} \sqrt[n]{x^n} = |x| \text{ for } n \text{ even}$$

$\sqrt{-2}$ is not a real #

(even roots of negative #'s are imaginary)

$\sqrt{x}$ domain is $[0,\infty)$

Rewrite as radical.

94. $(a^2b^4)^{3/5}$

$$\boxed{\sqrt[5]{(a^2b^4)^3}}$$

simplified . . .

$\sqrt[5]{x^5} = x$

$\sqrt[5]{a^6b^{12}} = \sqrt[5]{a^5a^1(b^2)^5b^2}$

$= \boxed{ab^2\sqrt[5]{a^1b^2}}$

rewrite as exponent

104. $\sqrt[4]{a^3}$

$= a^{3/4}$

110. $-\sqrt[4]{4x^5}$

$= -(4x^5)^{1/4}$

$= \boxed{-4^{1/4}x^{5/4}}$

7.1 HW

85-113 odd