Review

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

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

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

$\boxed{x=12,-3}$

6.6 Literal Equations

Wed HW: 6.1, 6.2, 6.3, 6.4

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

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

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

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

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

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

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

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

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

$$nP = R - C$$

$$nP + C = R$$

20. $X = ax + b$; X

$x - ax = b$

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

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

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

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

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

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

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

$a+x=abx$

$a=abx-x$

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

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

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

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

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

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

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

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

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

$V = \dfrac{V_1 + V_2}{\left(\frac{c^2 + V_1 V_2}{c^2}\right)} \leftrightarrow V = \dfrac{(V_1 + V_2)\cdot c^2}{c^2 + V_1 V_2}$

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

$Vc^2 + VV_1V_2 = c^2V_1 + c^2V_2$

$VV_1V_2 - c^2V_1 = c^2V_2 - Vc^2$

$V_1(VV_2 - c^2) = c^2V_2 - Vc^2$

$V_1 = \dfrac{c^2V_2 - Vc^2}{VV_2 - c^2}$

6.6 HW: 5-25 odd

7.1 Rational Exponents & Radical Expressions

$m, n \in \mathbb{Z}^+$; $a^{1/n} \in \mathbb{R}$

positive integers   real

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

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

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.

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

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

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

special case:

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

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

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

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

$$\left.\begin{aligned} \sqrt[2]{2^2} &= \sqrt[3]{4} = 2 \\ \sqrt[2]{(-2)^2} &= \sqrt[2]{4} = 2 \end{aligned}\right\} \sqrt[n]{x^n} = |x| \text{ for } n \text{ even}$$

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

(even roots of negative #'s are imaginary)

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

Rewrite as radical.

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

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

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

simplified . . .

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

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

rewrite as exponent

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

$= a^{3/4}$

$\sqrt[n]{x^m} = x^{m/n}$

$(x^m)^{1/n} = (x^{1/n})^m$

110. $-\sqrt[4]{4x^5} = -(4^{\frac{1}{4}})(x^5)^{\frac{1}{4}}$

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

7.1 HW

85-113 odd