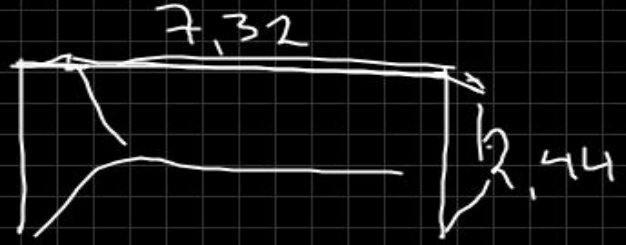
# Blandade övningar kap 1-4 (med räknare)

(s. 236-...)

**31**

[m]




Mål A


Mål B

~ likformighet

$$\frac{4,5}{7,32} = \frac{x}{2,44}$$

$$x = \frac{2,44 \cdot 4,5}{7,32}$$

$$x = 1,5 \text{ m}$$

Svar: höjden bör vara 1,5 m

(32)

$v$ = priset för en vuxen [kr/biljett], $v \in \mathbb{R}$

$b$ = priset för ett barn [kr/biljett], $b \in \mathbb{R}$

Definiera variabler.

a) Beskriv som ett ekv.system.

$$\begin{cases} 1 \cdot v + 3 \cdot b = 700 & \cdot(-2) \\ 2 \cdot v + 1 \cdot b = 650 \end{cases}$$

Svar: 1000 kr räcker (950:-).

b) Räcker 1000:- för $2v + 3b$ ?

$$\begin{cases} -2v - 6b = -1400 \\ 2v + b = 650 \end{cases}$$

$$0 - 5b = -750$$

$b = 150$ kr inst i 1)

$v = 700 - 3 \cdot 150 = 250$ kr

$2v + 3b =$

$2 \cdot 250 + 3 \cdot 150 =$

$500 + 450 =$

950 kr

# 33 Svara med tre gällande siffror

a) $x^{3,5} = 20000$

$(x^{3,5})^{\frac{1}{3,5}} = (20000)^{\frac{1}{3,5}}$

$x = 16,9$

b) $5 \cdot 10^x = 9$

$10^x = \frac{9}{5}$

$\lg 10^x = \lg \frac{9}{5}$

$x \cdot \underbrace{\lg 10}_{=1} = \lg \frac{9}{5}$

$x = 0,255$

c) $\lg x + 1 = 4,2$

$\lg x = 4,2 - 1$

$\lg x = 3,2$

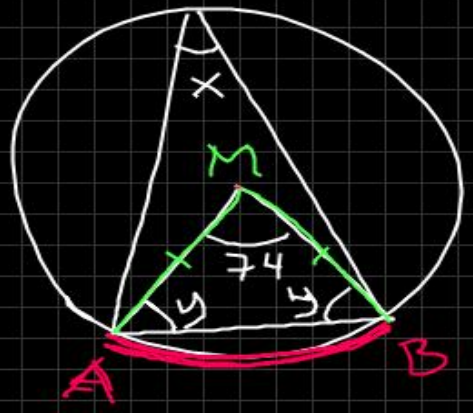
$10^{\lg x} = 10^{3,2}$

$x = 1584,9$

$x \approx 1580$

$x = 1,58 \cdot 10^3$

(34) Bestäm $x$ och $y$




$$\boxed{74^\circ = 2 \cdot x}$$

, randvinkel o medelp. vinkel.

$$x = 37^\circ$$

Likbent triangel, $\triangle ABM$.

vinkelsumma $\quad 180^\circ = 74^\circ + 2y$

$$180^\circ - 74^\circ = 2y$$

$$y = \frac{106^\circ}{2}$$

$$y = 53^\circ$$

Svar: $x = 37^\circ$

$y = 53^\circ$

(35) Löse elementar

$$0{,}5x^2 + 4116 = 91x$$

$$2 \cdot (0{,}5x^2 - 91x + 4116) = 0 \cdot 2$$

$$\boxed{x^2 - 182x + 8232 = 0}$$ pq.

$$x = 91 \pm \sqrt{91^2 - 8232}$$

$$x = 91 \pm \sqrt{49}$$

$$x = 91 \pm 7$$

Lösung: $x_1 = 98$, $x_2 = 84$

(36)

$N(0) = 12000$ kr

$N(3) = 18000$ kr

$$N(t) = C \cdot a^t$$

1) $12000 = C \cdot a^0$ → $a^0 = 1$

2) $18000 = C \cdot a^3$

$C = 12000$

inst. i 2)

2) $18000 = 12000 \cdot a^3$

$$a^3 = \frac{18000}{12000}$$

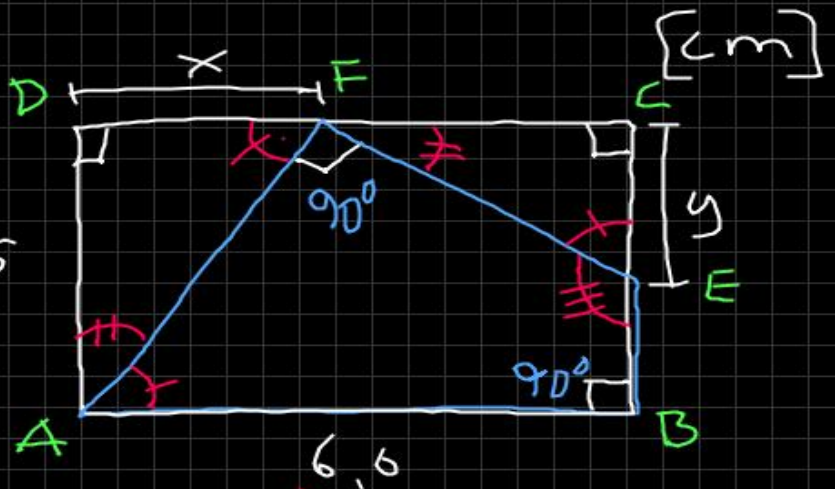
$$\left( = \frac{18}{12} = \frac{3 \cdot 6}{3 \cdot 4} = \frac{3 \cdot 3}{3 \cdot 2} = \frac{3}{2} = 1{,}5 \right)$$

$a = (1{,}5)^{1/3}$

$a = 1{,}145$

Räntan 14,5 %

**45** a) Bestäm ett samband mellan $x$ och $y$.
Lös ut $y$.




$\angle DFA = \angle FAB$ (Alternatvinkel)

$\angle FAB + \angle FEB = 180°$ (Vinkelsumman fyrhörning = 360°)

$\angle FEB = 90° + \angle EFC$ (Yttervinkel)

$\Rightarrow \angle DFA + \angle EFC = 90°$ (rakvinkel)

$\Rightarrow \boxed{\triangle ADF \sim \triangle FCE}$

$$\frac{x}{4,5} = \frac{y}{6,0-x} \Rightarrow$$

$$y = \frac{x}{4,5} \cdot (6,0-x)$$

b) $\begin{cases} y = \dfrac{x}{4,5}(6,0 - x) \\ y = 1,5 \end{cases}$

$1,5 = \dfrac{x}{4,5}(6,0 - x)$

$1,5 = \dfrac{x \cdot 6,0}{4,5} - \dfrac{x^2}{4,5}$

$6,75 = 6x - x^2$

$\boxed{x^2 - 6x + 6,75 = 0}$ PS.

$x = 3 \pm \sqrt{3^2 - 6,75}$

$x = 3 \pm 1,5$

$\begin{cases} x_1 = 4,5 \\ x_2 = 1,5 \end{cases}$