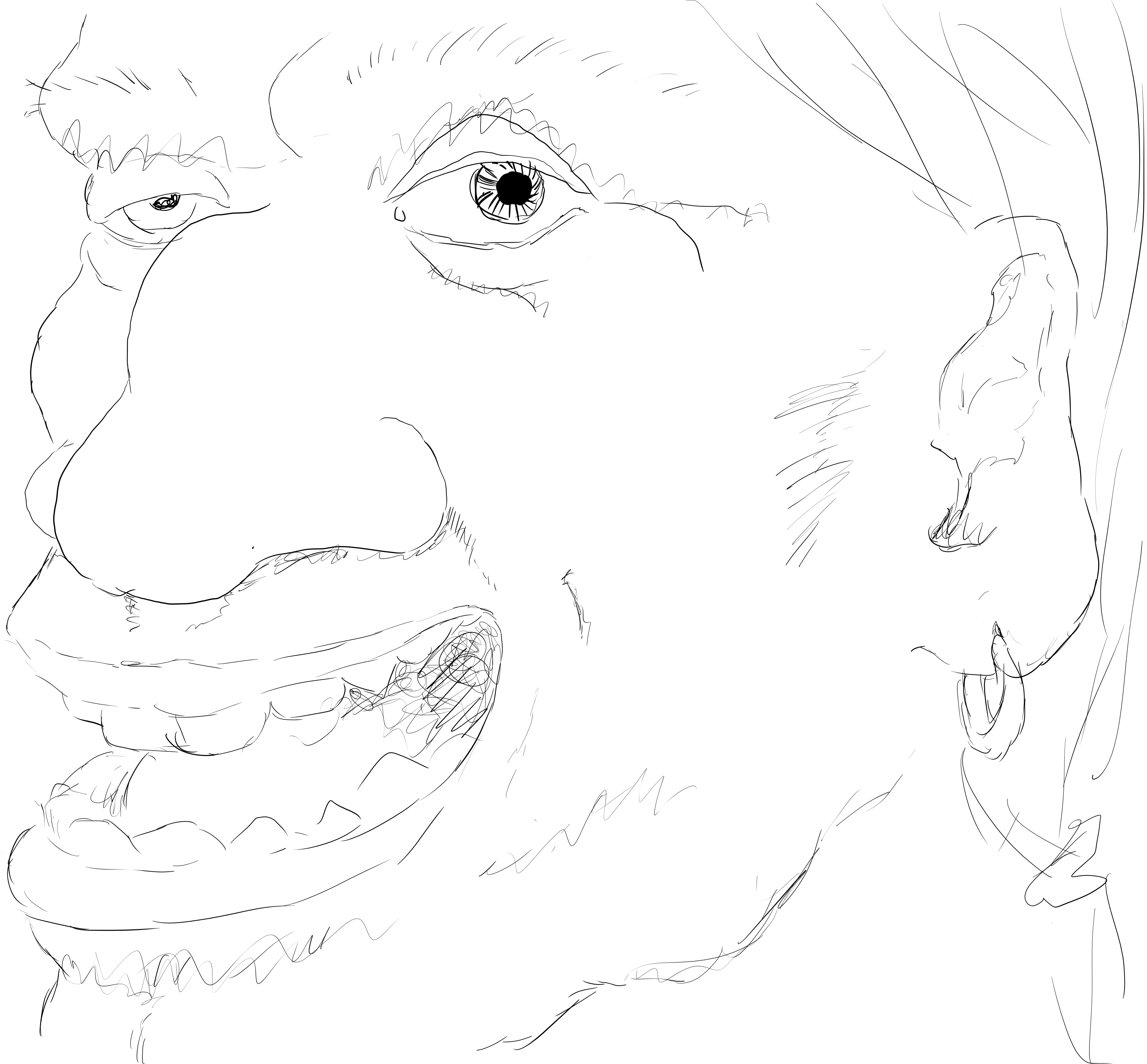

Definition: divisor / factor

d is a divisor of x $\underbrace{\text{iff}}$ if and only if

$x \in \mathbb{Z} \wedge d \in \mathbb{Z} \wedge \boxed{\frac{x}{d}} \in \mathbb{Z}$ — also a divisor

$\sqrt{6}$

divisors of 6 $= \{-6, -3, -2, -1, 1, 2, 3, 6\}$

The Trivial divisors of x are:

$\{-x, -1, 1, x\}$

$\frac{x}{d}$ $\quad x \div d \quad x/d$

$\sqrt{256} = 16$

$56 = 7 \cdot 8$

assum $\neg$ Thm $\neg(\neg(\text{hasntd}) \to \neg(1 < d \le \sqrt{x}))$

divisor

have n.t.d d $\land$ $\neg(1 < d \le \sqrt{x})$

$\neg(1 < d \land d \le \sqrt{x})$

$1 \ge d \lor \boxed{d > \sqrt{x}}$

⋮ math

$\perp$

Because assumi $\neg$ thm led to conj, thm.

divisor

$\frac{x}{d} = k$

$\frac{x}{k} = d > \sqrt{x}$

$\frac{x}{k} > \sqrt{x}$

$\sqrt{x} = \frac{x}{\sqrt{x}} > k$

$\boxed{1 < k} < \sqrt{x}$

k is non-trivial divisor

$$\neg\left(x \text{ has n.t.d} \rightarrow \neg\exists d.\ (d \text{ is n.t.d} \wedge 1 < d \leq \sqrt{x})\right)$$

$$\underline{x \text{ has n.t.d}} \wedge \forall d.\ \neg(d \text{ is n.t.d} \wedge 1 < d \leq \sqrt{x})$$

$$\underbrace{\neg(d \text{ is n.t.d}) \vee \neg}(1 < d \leq \sqrt{x})$$

$$\forall d.\ d \text{ is n.t.d} \rightarrow \neg(1 < d \leq \sqrt{x})$$

$$\cancel{d \leq 1} \vee \sqrt{x} < d$$

$$\forall d.\ \sqrt{x} < d$$

$$\frac{12}{8} = \boxed{\frac{3}{2}}$$

$$\frac{12}{4} = 3$$

$\sqrt{2} \notin \mathbb{Q}$

$x = 12 = 2 \cdot 2 \cdot 3$

$(2^2 \cdot 3)^2$

Cont

$x^2 = 2^4 \cdot 3^2$

$\sqrt{2} \in \mathbb{Q}$

$\exists x, y \in \mathbb{Z}.\ \sqrt{2} = \frac{x}{y}$

$2^{\boxed{2k}} \cdot \ldots$

$(2^k \cdot \ldots)^2$

even

$y\sqrt{2} = x$

odd

$\boxed{2} \boxed{y^2} = \underbrace{x^2}$

even

FTA

multiplicity of 2