

Rods

Math

$\pi = 3.14159$

$\phi = 1.61803$

$\sin(2x) = 2 \cdot \sin(x) \cdot \cos(x)$

$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$ (Taylor series)

Fast square root algorithm with Babylonian steps:

```
Float Sqrt(float num) {
    union {
        int i;
        float x;
    } u;

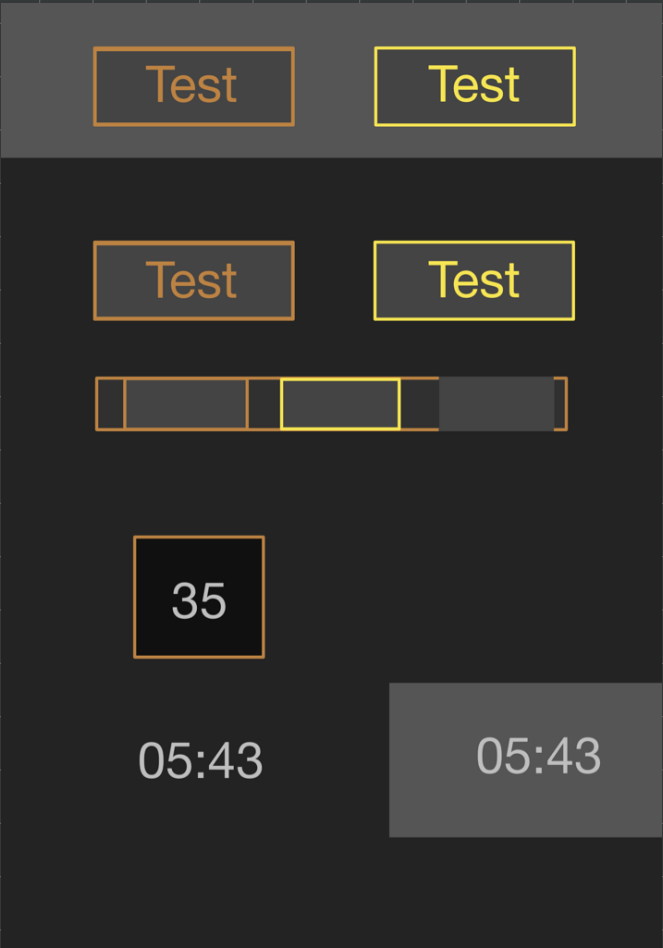
    u.x = num;
    u.i = (1 << 29) + (u.i >> 1) - (1 << 22);

    // Two babylonian steps, simplified from:
    // u.x = 0.5f(u.x + num/u.x);
    // u.x = 0.5f(u.x + num/u.x);
    u.x = (u.x + num/u.x) * 0.5f;
    u.x = 0.5f * (u.x + num/u.x);

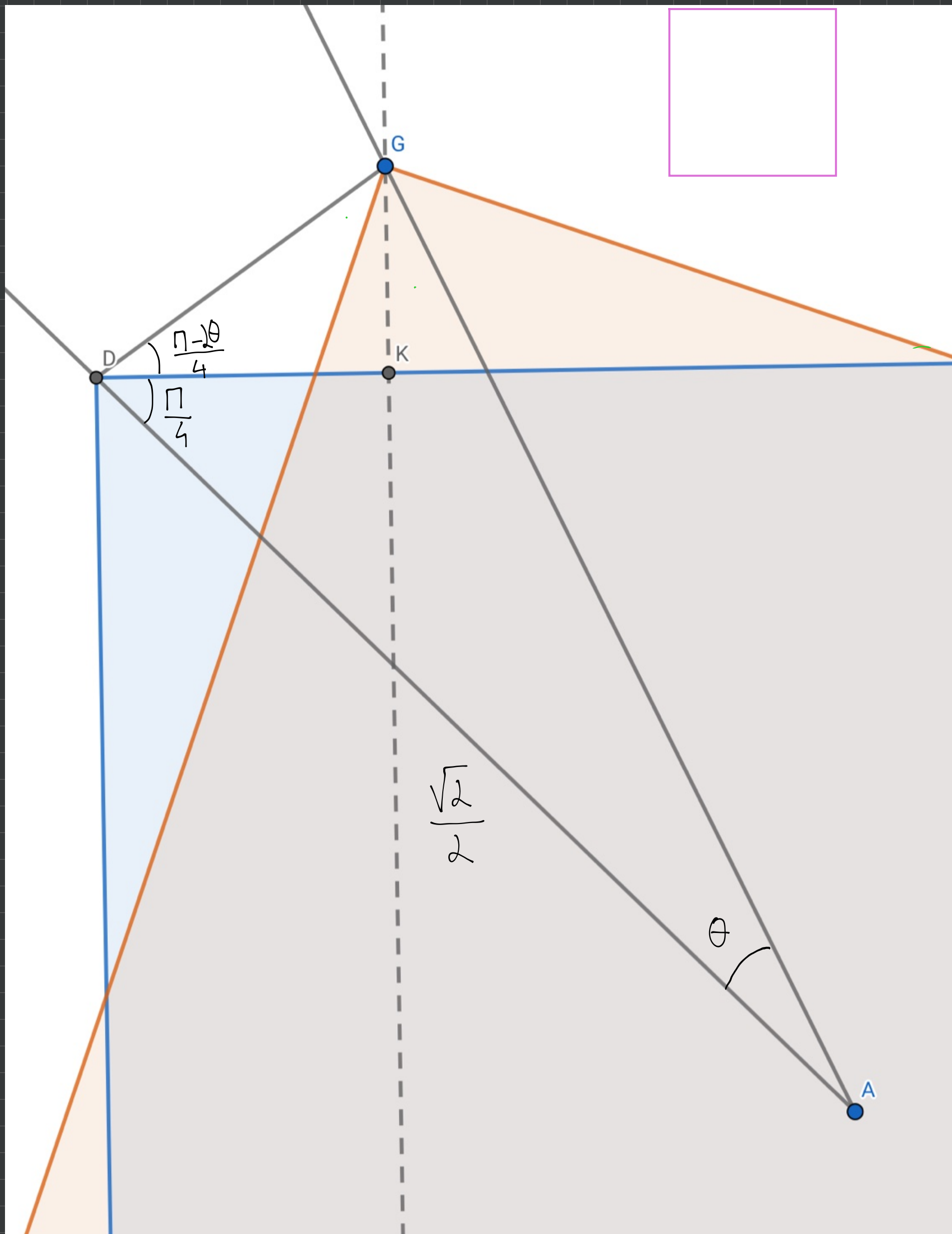
    return u.x;
}
```

Colors

COL_BG	0x23	0x23	0x23	0xFF	
COL_ROD	0x2E	0xA0	0x5D	0xFF	
COL_ELECTRIC_1	0xFB	0xA5	0x4A	0xFF	
COL_ELECTRIC_2	0xFB	0xE0	0x7F	0xFF	
COL_SELBOX	0xBB	0x33	0x33	0xFF	// Selection box
COL_FRECT	0x55	0x55	0x55	0xFF	// Flying rectangles
COL_UI_FG_PRIMARY	0xB1	0x77	0x41	0xFF	// Text in buttons
COL_UI_FG_SECONDARY	0xB6	0xB6	0xB6	0xFF	// Text in textbox, Timer
COL_UI_FG_EMPH	0xF4	0xE1	0x5A	0xFF	// Text in buttons, when selected
COL_UI_FG_DISABLED	0x64	0x64	0x64	0xFF	// Text in buttons, when disabled
COL_UI_BG_PRIMARY	0x3C	0x3C	0x3C	0xFF	// Button background
COL_UI_BG_SECONDARY	0x2A	0x2A	0x2A	0xFF	// Scrollbar background
COL_UI_BG_TERTIARY	0x58	0x58	0x58	0xDD	// Toolbar
COL_UI_BG_QUATERNARY	0x0B	0x0B	0x0B	0xFF	// Background in textbox
COL_UI_BG_ACTIVE	0x00	0xA4	0x30	0xFF	// Active background in switch
COL_PLAY_BTN					



Rod Model



$$\hat{ADG} = \frac{\pi - \theta}{2} \quad \hat{ADK} = \frac{\pi}{4}$$

$$\hat{KDG} = \hat{ADG} - \hat{ADK} = \frac{\pi - \theta}{2} - \frac{\pi}{4} = \frac{2\pi - 2\theta - \pi}{4}$$

$$\Rightarrow \hat{KDG} = \frac{\pi - 2\theta}{4}$$

$$AD = \frac{\sqrt{2}}{2}$$

$$\frac{DG}{2} = AD \cdot \sin\left(\frac{\theta}{2}\right) \Rightarrow DG = 2 \cdot \frac{\sqrt{2}}{2} \sin\left(\frac{\theta}{2}\right) \Rightarrow$$

$$DG = \sqrt{2} \sin\left(\frac{\theta}{2}\right)$$

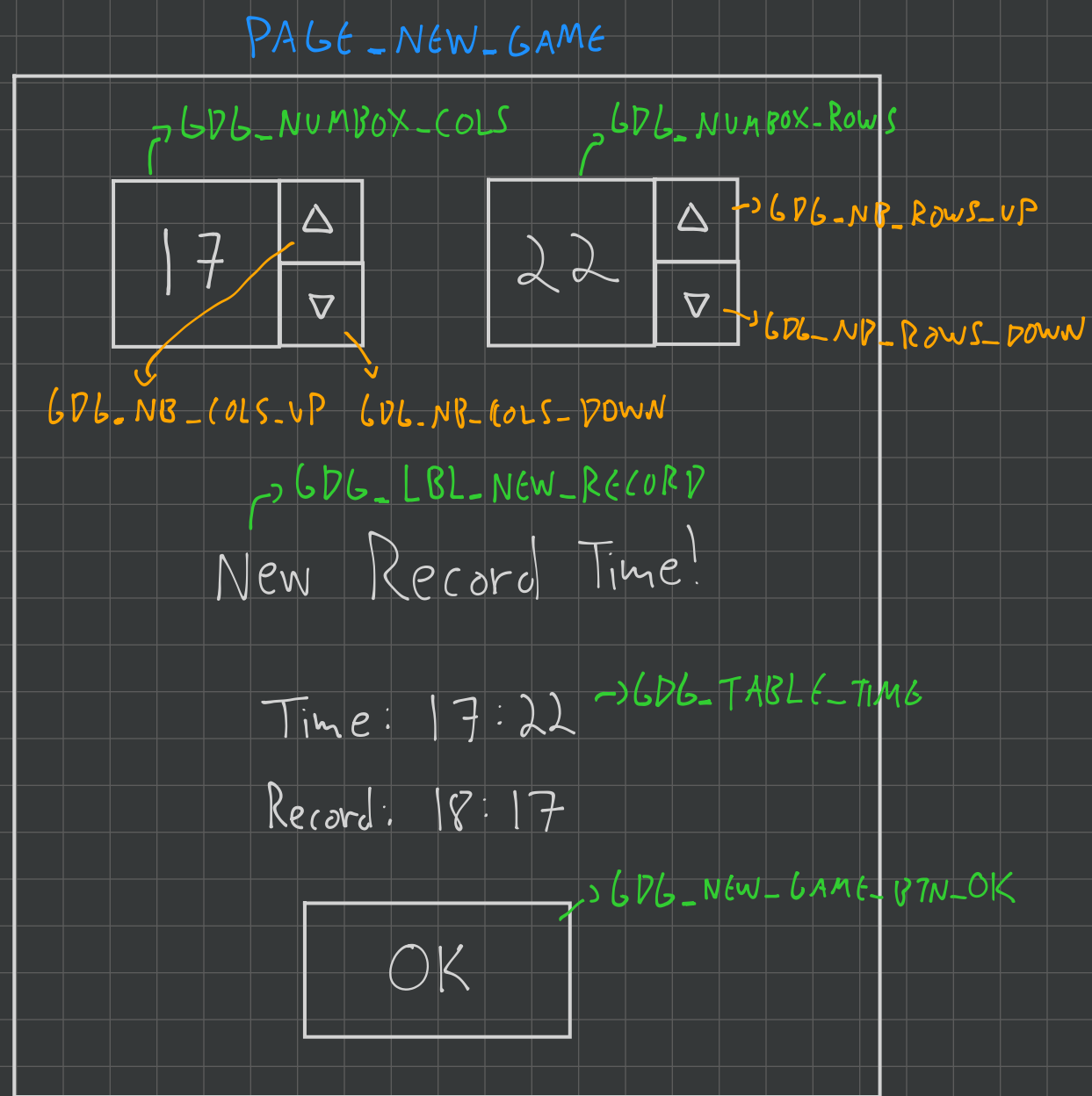
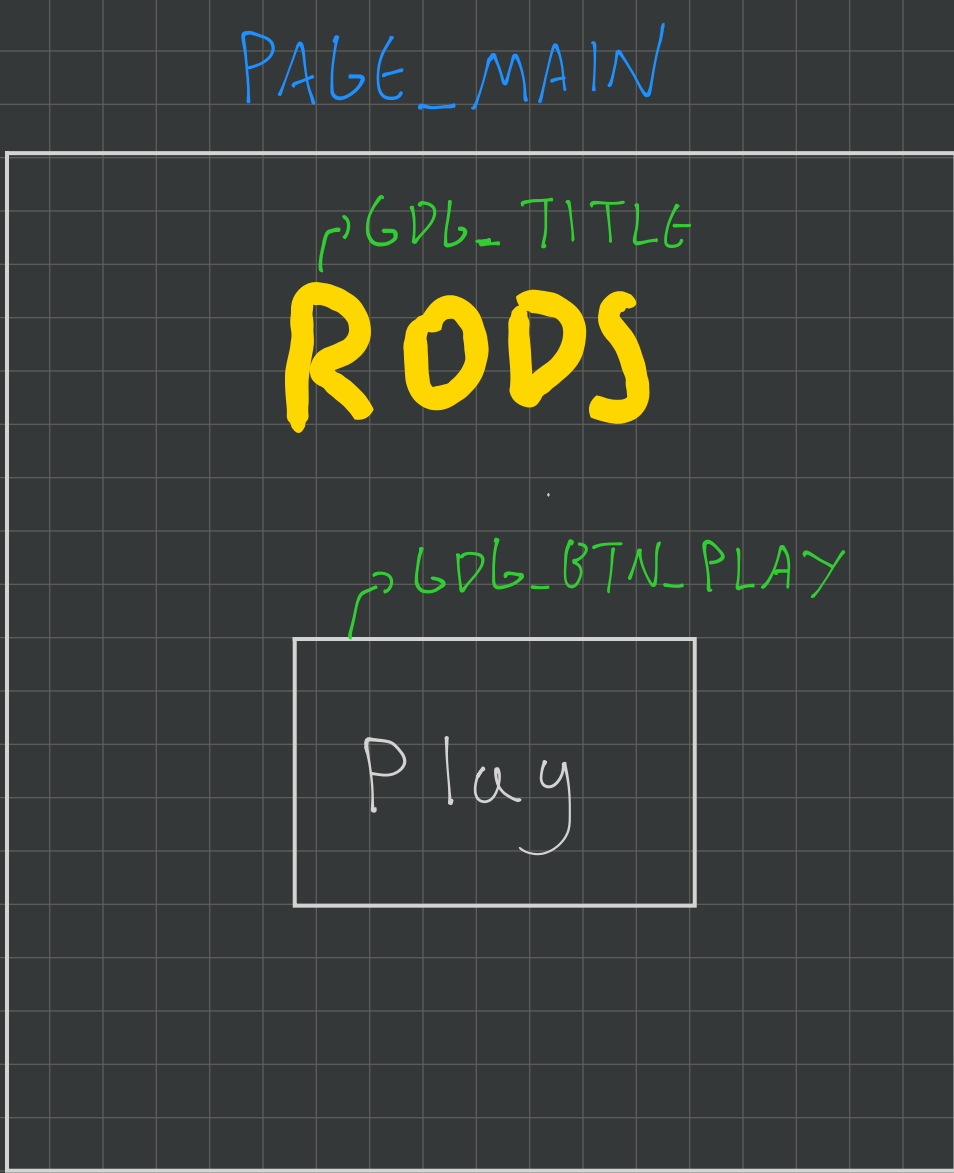
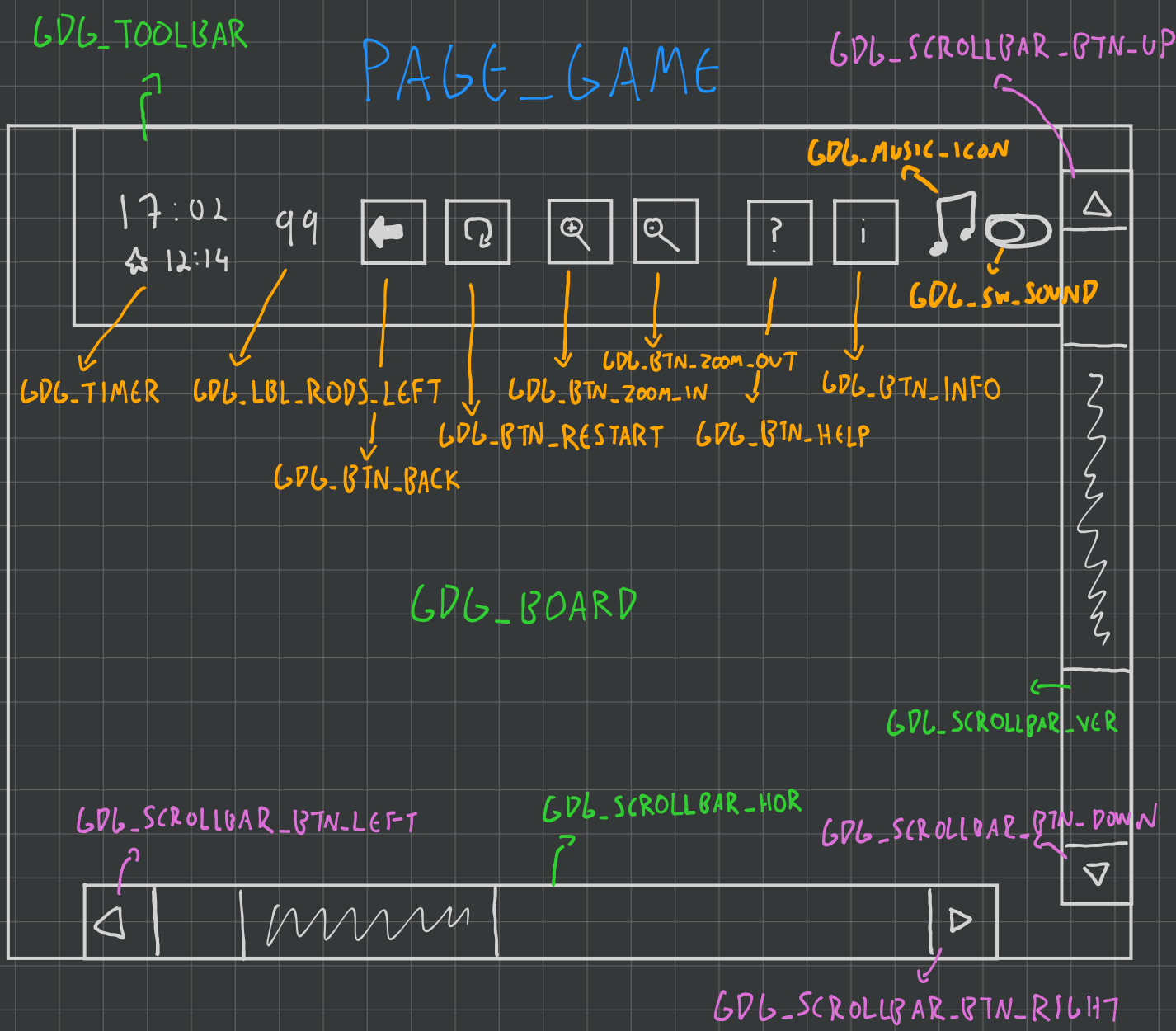
$$dx = DK = DG \cos(\hat{KDG}) \Rightarrow$$

$$dx = \sqrt{2} \sin\left(\frac{\theta}{2}\right) \cos\left(\frac{\pi - 2\theta}{4}\right)$$

$$dy = -GK = -DG \sin(\hat{KDG}) \Rightarrow$$

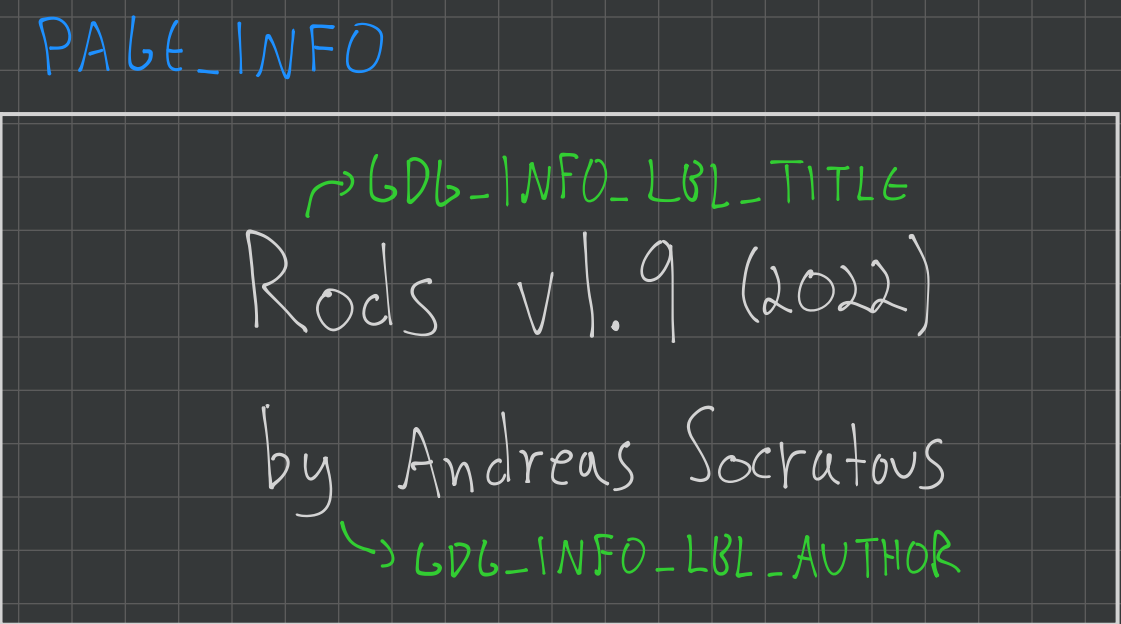
$$dy = -\sqrt{2} \sin\left(\frac{\theta}{2}\right) \sin\left(\frac{\pi - 2\theta}{4}\right)$$

USER INTERFACE.



PAGE_HELP

Arrow Keys	Pan the board
W, A, S, D	Move the selection box
+ / -	Zoom in/out
Space	Set default view
Enter	Press / Rotate
Tab	Select next
T	Toggle toolbar
M	Sound on/off
GDB_TABLE_HELP	



ICONS

Arrow Right	▶	Medal	🏆
Arrow Down	▼	Music	🎵
Arrow Left	◀	Restart	↺
Arrow Up	▲	Zoom In	🔍
Back	⬅	Zoom Out	🔍
Help	?		
Info	i		

