Heimadæmi 2

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23. september 2023

1 Spurning 1

1.1 Dæmi 1

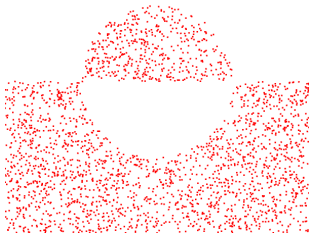
1. Dæmi 1
2. litarinn

Mynd 1: `triangle_dæmi1`

2 Spurning 2

2.1 Dæmi 1

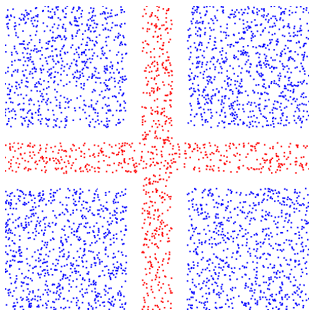
1. Dæmi 1
2. litarinn



Mynd 2: `fallingPoints_dæmi1`

2.2 Dæmi 2

1. Dæmi 2
2. litarinn



Mynd 3: `fallingPoints_dæmi2`

3 Spurning 3

3.1 Dæmi 1

1. $M = \begin{bmatrix} -\frac{1}{3} & \frac{2}{3} \\ \frac{2}{3} & -\frac{1}{3} \end{bmatrix}$
2. $\underline{\underline{[0, 1]}}$

3.2 Dæmi 2

1. $M = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$
2. $\underline{\underline{[3, -1]}}$

4 Spurning 4

4.1 Dæmi 1

1. $\vec{p} = (a, b)$
   $\vec{q} = (-b, a)$
   $\vec{p} \cdot \vec{q} = \vec{p}_x\vec{q}_x + \vec{p}_y\vec{q}_y$
   $a * -b + a * b = -ba + ba$
   $\underline{\underline{-ba + ba = 0}}$
   `þetta er hornrætt,`
   `Vegna ef svarið er 0 þá er það hornrétt`

4.2 Dæmi 2

1. $\vec{c} = \vec{a} \times \vec{b} = [\vec{a}_y\vec{b}_z - \vec{a}_z\vec{b}_y, \quad \vec{a}_z\vec{b}_x - \vec{a}_x\vec{b}_z, \quad \vec{a}_x\vec{b}_y - \vec{a}_y\vec{b}_x]$

2. $\vec{c} = \vec{v} \times \vec{w} = [\vec{v}_y\vec{w}_z - \vec{v}_z\vec{w}_y, \quad \vec{v}_z\vec{w}_x - \vec{v}_x\vec{w}_z, \quad \vec{v}_x\vec{w}_y - \vec{v}_y\vec{w}_x]$
   $\underline{\underline{[0, 0, 1]}} = \vec{v} \times \vec{w} = [0 * 0 - 0 * 1, \quad 0 * 0 - 1 * 0, \quad 1 * 1 - 0 * 0]$

3. $\vec{c} = \vec{w} \times \vec{v} = [\vec{w}_y\vec{v}_z - \vec{w}_z\vec{v}_y, \quad \vec{w}_z\vec{v}_x - \vec{w}_x\vec{v}_z, \quad \vec{w}_x\vec{v}_y - \vec{w}_y\vec{v}_x]$
   $\underline{\underline{[0, 0, -1]}} = \vec{w} \times \vec{v} = [1 * 0 - 0 * 0, \quad 0 * 1 - 0 * 0, \quad 0 * 0 - 1 * 1]$

4.3 Dæmi 3

1. $\vec{c} = \vec{a} \times \vec{b} = [\vec{a}_y\vec{b}_z - \vec{a}_z\vec{b}_y, \quad \vec{a}_z\vec{b}_x - \vec{a}_x\vec{b}_z, \quad \vec{a}_x\vec{b}_y - \vec{a}_y\vec{b}_x]$

2. $\vec{c} = \vec{a} \times \vec{a} = [\vec{a}_y\vec{a}_z - \vec{a}_z\vec{a}_y, \quad \vec{a}_z\vec{a}_x - \vec{a}_x\vec{a}_z, \quad \vec{a}_x\vec{a}_y - \vec{a}_y\vec{a}_x]$
   $\vec{a}_y\vec{a}_z - \vec{a}_z\vec{a}_y = 0$
   $\vec{a}_x\vec{a}_y - \vec{a}_y\vec{a}_x = 0$
   $\vec{a}_x\vec{a}_y - \vec{a}_y\vec{a}_x = 0$
   $\vec{c} = \underline{\underline{[0, 0, 0]}}$

4.4 Dæmi 4

1. $\vec{c} = \vec{a} \times \vec{b} = [\vec{a}_y\vec{b}_z - \vec{a}_z\vec{b}_y, \quad \vec{a}_z\vec{b}_x - \vec{a}_x\vec{b}_z, \quad \vec{a}_x\vec{b}_y - \vec{a}_y\vec{b}_x]$

2. $\vec{s} = \vec{v} \times \vec{w} = \underline{\underline{[\vec{v}_y\vec{w}_z - \vec{v}_z\vec{w}_y, \quad \vec{v}_z\vec{w}_x - \vec{v}_x\vec{w}_z, \quad \vec{v}_x\vec{w}_y - \vec{v}_y\vec{w}_x]}}$
   $\vec{t} = \vec{v} \times \vec{s} = \underline{\underline{[\vec{v}_y\vec{s}_z - \vec{v}_z\vec{s}_y, \quad \vec{v}_z\vec{s}_x - \vec{v}_x\vec{s}_z, \quad \vec{v}_x\vec{s}_y - \vec{v}_y\vec{s}_x]}}$

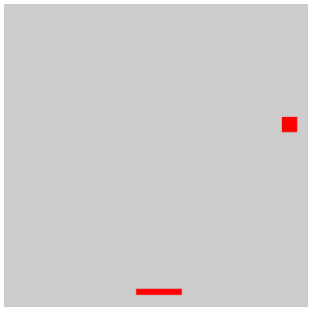
3. `let say` $\vec{v} = [1, 0, 0]$ and $\vec{w} = [2, 1, 0]$.
   then
   $[0, 0, 1] = \vec{s} = \vec{v} \times \vec{w} = [0 * 0 - 0 * 0, \quad 0 * 2 - 1 * 0, \quad 1 * 1 - 0 * 2]$
   $[0, -1, 0] = \vec{t} = \vec{v} \times \vec{s} = [0 * 1 - 1 * 0, \quad 0 * 0 - 1 * 1, \quad 1 * 0 - 0 * 0]$

   $\vec{v} \cdot \vec{s} = \vec{v}_x\vec{s}_x + \vec{v}_y\vec{s}_y + \vec{v}_z\vec{s}_z$
   $0 = \vec{v} \cdot \vec{s} = 1 * 0 + 0 * 0 + 0 * 1$
   $0 = \vec{v} \cdot \vec{t} = 1 * 0 + 0 * -1 + 0 * 0$
   then $\vec{v}, \vec{s}, \vec{t}$ eru allir hornréttir

5 Spurning 5

5.1 Dæmi 1

1. Dæmi 1



Mynd 4: `box-bounce_dæmi1`

Heimildir

[1] Daníel Ágúst. *Heimadæmi 3*. URL: https://danielagust.github.io/TOL105M-Tolvugrafik-Daniel/Code/Heimad%C3%A6mi/heimad%C3%A6mi_3/heimad%C3%A6mi_3_index.html.

[2] Daníel Ágúst. *Heimadæmi 3 myndir*. URL: https://danielagust.github.io/TOL105M-Tolvugrafik-Daniel/Code/Heimad%C3%A6mi/heimad%C3%A6mi_3/img.html.