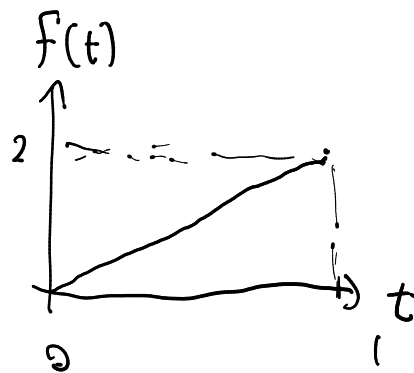


sec.
S.S.2



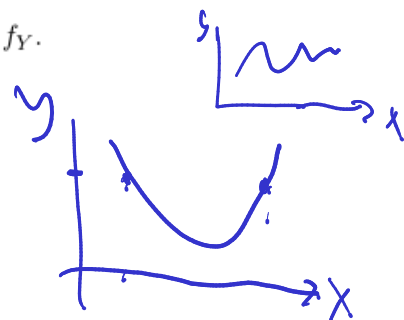
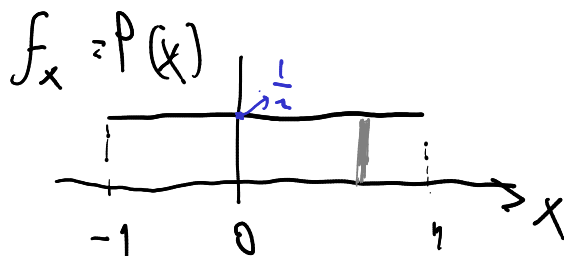
$$\frac{1}{2} \cdot 2 = 1$$

$$P(A) = \int_{-\infty}^{\infty} f_V(t) P(A | V = t) dt$$

$$P(\text{win}) = \int_0^1 2t t^5 dt = \frac{2}{7}$$

Problem 2

Suppose X has a uniform distribution on $(-1,1)$, and let $Y = X^2$. Find f_Y .



$$Y = X^2 \quad y = g(x) = x^2 \quad : X = \pm\sqrt{y}$$

$$f_Y = \frac{1}{2\sqrt{y}}$$

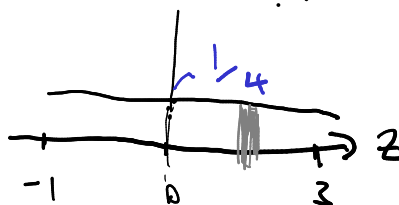


$$P(y) = \sum \frac{\partial x}{\partial y} P(x) \quad \text{where } x | g(x) = y$$

Let's deal with a simpler problem first
 $Z = 1 + 2X$

$$X = \frac{Z-1}{2}$$

$$\frac{\partial x}{\partial z} = \frac{1}{2}$$



$$\frac{\partial z}{\partial x} P(z) = \frac{\partial x}{\partial z} P(x)$$

$$P(z) = \frac{\partial x}{\partial z} P(x)$$