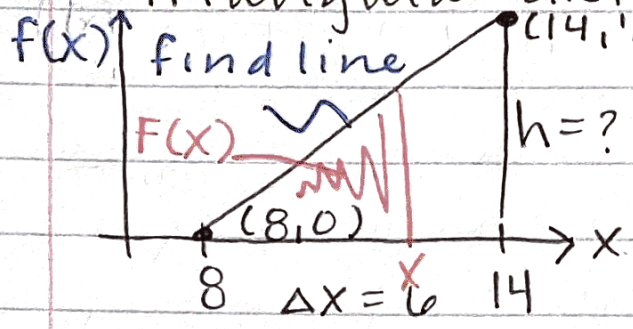
32 Monte Carlo Methods

- Invert CDF

PDF → CDF

triangular dist.



$A = 1 = \frac{1}{2} bh = \frac{1}{2}(6)h \quad \therefore h = \frac{1}{3}$

$m = \Delta y / \Delta x = \frac{1}{3} / 6 = \frac{1}{18}$

$y - 0 = \frac{1}{18}(x - 8)$

$f(x) = \frac{1}{18}(x - 8)$

pdf

$f(x) = \frac{1}{18}(x - 8)$

cdf

$$F(x) = P(X < x) = \int_8^x \left(\frac{1}{18}y - \frac{8}{18}\right) dy = \frac{1}{36}y^2 - \frac{8}{18}y \Big|_8^x$$

$$= \frac{1}{36}x^2 - \frac{8}{18}x - \frac{8^2}{36} + \frac{8}{18}(8)$$

$$= \frac{1}{36}x^2 - \frac{8}{18}x + \frac{32}{18}$$

↳ complete the square

. . .

$$x = 8 + \sqrt{36u}$$

SEE R