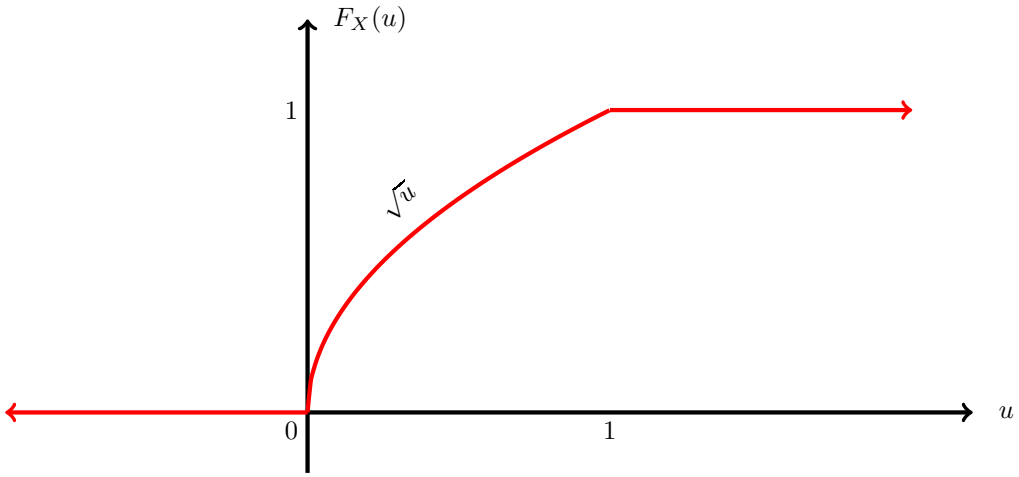
Let X be a random variable, whose cummulative distribution function equals $\sqrt{u}$ in the interval $[0, 1]$, as shown below. If $Y = 6 - 9X$, then what is the CDF of Y evaluated at 5 ?



(a) 2/3

(b) 1/3

(c) $\sqrt{5}$

(d) $1/\sqrt{5}$

(e) 1/15

(f) 1/9

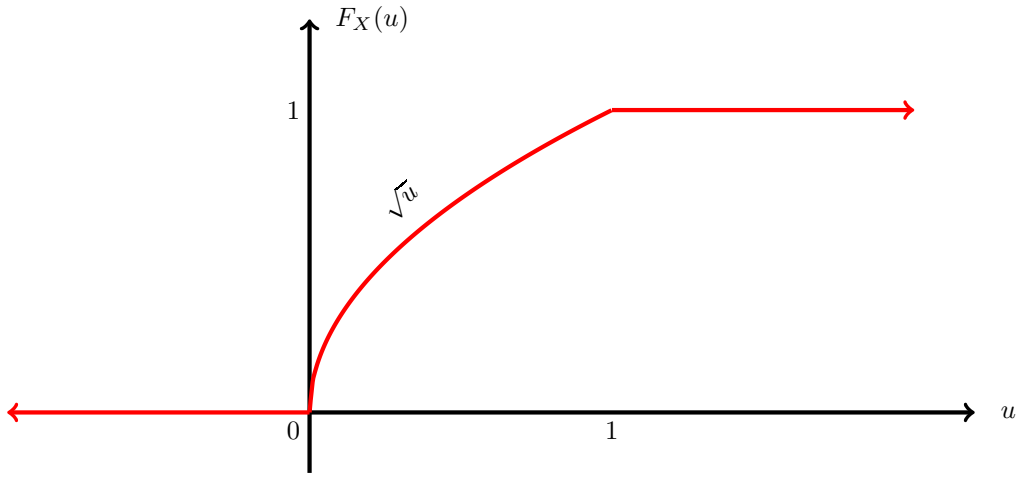
(g) 0

(h) 1

(i) 1/2

(j) None of these

Let X be a random variable, whose cummulative distribution function equals $\sqrt{u}$ in the interval $[0, 1]$, as shown below. If $Y = 7 - 16X$, then what is the CDF of Y evaluated at 6 ?



(a) 3/4

(b) 1/4

(c) $\sqrt{6}$

(d) $1/\sqrt{6}$

(e) 1/23

(f) 1/16

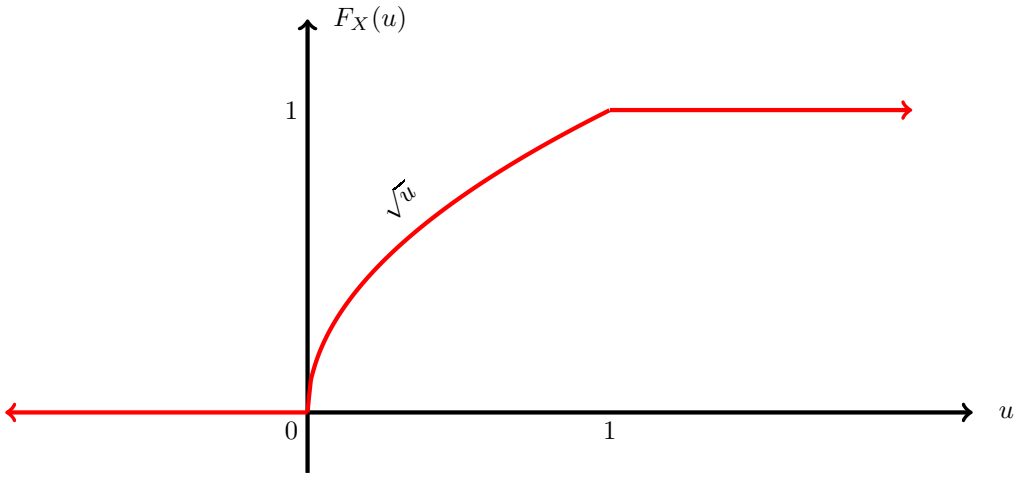
(g) 0

(h) 1

(i) 1/2

(j) None of these

Let X be a random variable, whose cummulative distribution function equals $\sqrt{u}$ in the interval $[0, 1]$, as shown below. If $Y = 8 - 25X$, then what is the CDF of Y evaluated at 7 ?



(a) 4/5

(b) 1/5

(c) $\sqrt{7}$

(d) $1/\sqrt{7}$

(e) 1/33

(f) 1/25

(g) 0

(h) 1

(i) 1/2

(j) None of these

Solution:
If $A > 0$, then

$$\begin{aligned} F_Y(u) &= P(B - Ax \leq u) \\ &= P(x \geq (B-u)/A) \\ &= 1 - F_X((B-u)/A) \\ &= 1 - \sqrt{(B-u)/A}. \end{aligned}$$

This requires $(B-u)/A \in [0,1]$.
If $(B-u)/A = 1/k^2$, then $F_Y(u) = (k-1)/k$.