

# A

## Survival Distribution Function

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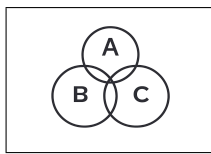


$$S(x) = P(X > x)$$

$$P(x < 0) = 1$$

$$P(0 \leq x \leq 10) = 1 - \frac{x}{10}$$

$$P(x > 10) = 0$$



$$F(x) = 1 - S(x)$$

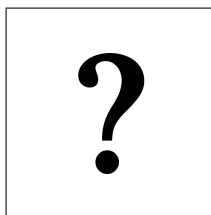
$$F(x < 0) = 0$$

$$F(0 \leq x \leq 10) = x/10$$

$$F(x > 10) = 1$$

$$P(3 < X \leq 7) = F(7) - F(3) = \frac{7}{10} - \frac{3}{10} = \boxed{0.4}$$

$$P(3 < X \leq 7) = S(3) - S(7) = \left(1 - \frac{3}{10}\right) - \left(1 - \frac{7}{10}\right) = \boxed{0.4}$$



$$S(x < 0) = 1$$

$$S(0 \leq x \leq 100) = 1/10(100 - x)^{1/2}$$

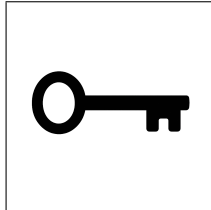
$$S(x > 100) = 0$$

$$CDF = ?$$

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$$F(x < 0) = 1 - S(x < 0)$$

$$F(x < 0) = 1 - P(x < 0)$$

$$F(x < 0) = 1 - 1$$

$$F(x < 0) = 0$$

$$F(0 \leq x \leq 100) = 1 - S(0 \leq x \leq 100)$$

$$F(0 \leq x \leq 100) = 1 - P(0 \leq x \leq 100)$$

$$F(0 \leq x \leq 100) = 1 - \frac{1}{10}\sqrt{100 - x}$$

$$F(x > 100) = 1 - S(x > 100)$$

$$F(x > 100) = 1 - P(x > 100)$$

$$F(x > 100) = 1 - 0$$

$$F(x > 100) = 1$$

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$$P(65 < X \leq 75) = F(75) - F(65)$$

$$F(75) = 1 - \frac{1}{10}\sqrt{100 - 75}$$

$$F(75) = 1 - \frac{1}{10} \cdot 5$$

$$F(75) = 1 - 0.5$$

$$F(75) = 0.5$$

$$F(65) = 1 - \frac{1}{10}\sqrt{100 - 65}$$

$$F(65) = 1 - \frac{\sqrt{35}}{10}$$

$$P(65 < X \leq 75) = 0.5 - \left(1 - \frac{\sqrt{35}}{10}\right)$$

$$P(65 < X \leq 75) = \frac{\sqrt{35} - 5}{10}$$

$$P(65 < X \leq 75) \approx \boxed{0.0916}$$