

$$\delta\delta\alpha\wedge\gamma\wedge\delta\delta\delta\gamma = A \quad (1)$$

$$\delta\delta\alpha\wedge\gamma\wedge\delta\delta\gamma = B$$

$$P(\bar{A} \cap \bar{B}) = 0.1, \quad P(B) = 0.6$$

$$P(A \cap B) + P(B \cap \bar{A}) = 0.7$$

	A	$\bar{A}$	
B	0.2	0.4	0.6
$\bar{B}$	0.3	0.1	0.4
	0.5	0.5	

$$k) P(A) = \boxed{0.5} \quad \text{a) } P(B \cap \bar{A}) = \boxed{0.4}$$

$$c) C = \delta\delta\alpha\wedge\delta\delta\delta\gamma$$

$$P(\bar{B}/C) = \frac{P(\bar{B} \cap C)}{P(C)} = \frac{P(A \cap \bar{B})}{0.7} = \frac{0.3}{0.7}$$

$$= \boxed{0.43}$$

$$(2) \quad k) \quad K \int_5^{\infty} \frac{1}{x^2} dx = 1 \quad K \left(-\frac{1}{x} \right) \Big|_5^{\infty} = 1$$

$$K \left(\frac{1}{5} \right) = 1, \quad \boxed{K = 5}$$

$$\text{a) } F(x) = 5 \int_5^x \frac{1}{t^2} dt = 5 \left(-\frac{1}{t} \right) \Big|_5^x$$

$$= 5 \left(-\frac{1}{x} + \frac{1}{5} \right) = \boxed{1 - \frac{5}{x}, \quad 5 < x < \infty}$$

$$c) P(X > 15) = 1 - F(15) = \frac{5}{15} = \boxed{\frac{1}{3}}$$

3)

הסתברות של 0.25 שיהיה 100 מ"מ
הסתברות של 0.75 שיהיה 100 מ"מ

$$X \sim B(5, 0.25)$$

$$E(X) = 5(0.25) = 1.25$$

$$Var(X) = 5(0.25)(0.75) = 0.9375$$

הסתברות של 100 מ"מ שיהיה 100 מ"מ = Y

$$Y = 20X$$

$$E(Y) = 20(1.25) = \boxed{25}$$

$$Var(Y) = (20)^2(0.9375) = \boxed{375}$$

א) הסתברות של 0.103 שיהיה 100 מ"מ = Z

$$Z \sim B(10, 0.103)$$

$$P = P(X \geq 3) = \binom{5}{3} (0.25)^3 (0.75)^2 + \binom{5}{4} (0.25)^4 (0.75) + (0.25)^5 = 0.103$$

$$Z \sim B(10, 0.103)$$

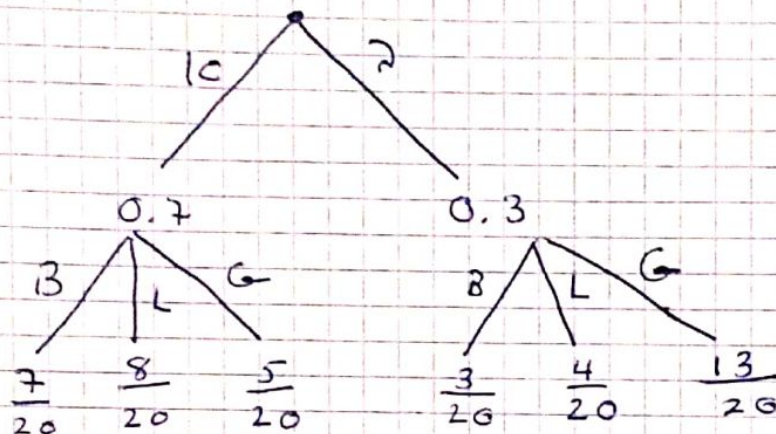
$$P(Z > 1) = 1 - (P(Z=0) + P(Z=1))$$

$$= 1 - \left((0.897)^{10} + \binom{10}{1} (0.103) (0.897)^9 \right) = \boxed{0.275}$$

4) $B = \text{time}$

$L = \text{signal}$

$G = \text{path}$



$$k) \frac{\binom{7}{1} \binom{13}{2}}{\binom{20}{3}} \cdot (0.7) + \frac{\binom{3}{1} \binom{17}{2}}{\binom{20}{3}} \cdot (0.3)$$

$$= 0.335 + 0.107 = \boxed{0.442}$$

2) $C = \text{time and path}$

$$P(c/c) = \frac{P(c/k) \cdot P(k)}{P(c)} = \frac{0.335}{0.442} = \boxed{0.757}$$

5) $k) 0.2 + 0.8^2 (0.2) + (0.8)^4 (0.2) + \dots$

$$= 0.2 (1 + (0.8)^2 + (0.8)^4 + \dots)$$

$$= 0.2 \left(\frac{1}{1 - (0.8)^2} \right) = 0.2 \left(\frac{1}{0.36} \right) = \boxed{0.56}$$

2) $(0.8)^{12} = \boxed{0.0687}$

$$⑥ \quad X \sim N(40, \sigma)$$

$$P(X > 45) = 0.1, \quad P\left(Z > \frac{45-40}{\sigma}\right) = 0.1$$

$$1 - \Phi\left(\frac{5}{\sigma}\right) = 0.1, \quad \Phi\left(\frac{5}{\sigma}\right) = 0.9$$

$$\frac{5}{\sigma} = Z_{0.9} = 1.28, \quad \sigma = 3.91$$

$$b) \quad P(X < 39) = \Phi\left(\frac{39-40}{3.91}\right) = \Phi(-0.26)$$

$$= 1 - \Phi(0.26) = \boxed{0.3974}$$

$$2) \quad P(X < K) = \frac{1}{7}$$

$$P\left(Z < \frac{K-40}{3.91}\right) = 0.143$$

$$\Phi\left(\frac{K-40}{3.91}\right) = 0.143$$

$$\frac{K-40}{3.91} = Z_{0.143} = -1.07$$

$$K = 40 - (3.91)(1.07) = \boxed{35.81}$$

$$c) \quad 39 \sim N \text{ with } \mu \text{ and } \sigma \text{ given } Y = 9$$

$$Y \sim B(50, 0.3974) \rightarrow Y \sim N(19.87, 3.49)$$

$$P(Y \geq 25) = P(Y > 24.5) = 1 - \Phi\left(\frac{24.5-19.87}{3.49}\right)$$

$$= 1 - \Phi(1.33) = \boxed{0.0918}$$

$$3) \lambda = 2$$

$$1c) \lambda_1 = 10$$

$$\frac{10^{10} e^{-10}}{10!} = \boxed{0.125}$$

$$2) \lambda_2 = 8$$

$$P(X \geq 2) = 1 - P(X=0) - P(X=1)$$

$$= 1 - e^{-8} - 8e^{-8} = 1 - 9e^{-8} = \boxed{0.997}$$