Question 11.16.3.8
Probability and Random Processes

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A team of medical students doing their internship have to assist during surgeries at a city hospital. The probabilities of surgeries rated as very complex, complex, routine, simple or very simple are respectively, 0.15, 0.20, 0.31, 0.26, .08. Find the probabilities that a particular surgery will be rated

1) complex or very complex;
2) neither very complex nor very simple;
3) routine or complex
4) routine or simple

Solution:

parameter	Values	Description
X	1	very complex
	2	complex
	3	routine
	4	simple
	5	very simple

TABLE 4: Random variable declaration.

1) complex or very complex

$$= p_X(1) + p_X(2) \tag{1}$$
$$= 0.15 + 0.20 \tag{2}$$
$$= 0.35 \tag{3}$$

2) neither very complex nor very simple

$$= 1 - (p_X(1) + p_X(5)) \tag{4}$$
$$= 1 - (0.15 + 0.08) \tag{5}$$
$$= 0.77 \tag{6}$$

3) routine or complex

$$= p_X(2) + p_X(3) \tag{7}$$
$$= 0.20 + 0.31 \tag{8}$$
$$= 0.51 \tag{9}$$

4) routine or simple

$$= p_X(3) + p_X(4) \tag{10}$$
$$= 0.31 + 0.26 \tag{11}$$
$$= 0.57 \tag{12}$$