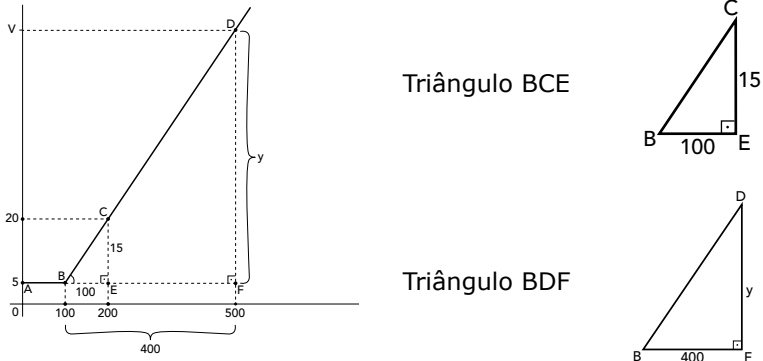
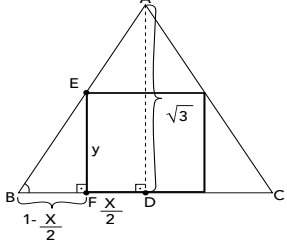


PADRÃO DE RESPOSTAS
(VALOR POR QUESTÃO: 2,00 PONTOS)

Questão	Resposta
1	<p>Soma das velocidades: $(5 \times 50) + (15 \times 60) + (20 \times 70) + (30 \times 80) + (20 \times 90) + (10 \times 100) = 7750$</p> <p>Quantidade de veículos: $5 + 15 + 20 + 30 + 20 + 10 = 100$</p> <p>Média = $\frac{7750}{100} = 77,5$ km/h</p>
2	<p>Vértices: $(0,2)$, $(9,0)$ e $(7,9)$</p> <p>Área do triângulo da figura $S = \frac{1}{2} \begin{vmatrix} 0 & 2 & 1 \\ 9 & 0 & 1 \\ 7 & 9 & 1 \end{vmatrix} = \frac{1}{2} 77 = \frac{77}{2} = 38,5$ cm²</p> <p>Área do Triângulo das Bermudas $\frac{38,5}{A} = \frac{1}{(17000000)^2} \Rightarrow A = 111.265 \times 10^{11}$ cm² = 1.112.650 km²</p>
3	<p>$\frac{A \text{ até } B}{4} \times \frac{B \text{ até } C}{3} = 12$</p> <p>$\frac{A \text{ até } D}{5} \times \frac{D \text{ até } C}{2} = 10$</p> <p>Total = $12 + 10 = 22$</p>
4	<p>Progressão geométrica de razão 2 e 6 termos.</p> <p>1º termo (2009) = 731×10^6</p> <p>6º termo (2019) = $a_1 \times 2^5 = 731 \times 10^6 \times 32 = 23392 \times 10^6$</p> <p>23.392.000.000 transistores</p>
5	<p>$V_{FEDGBA} = V_{ABCDEF} - V_{ABCG}$</p> <p>$V_{ABCDEF} = \frac{3 \times 5}{2} \times 10 = \frac{150}{2} = 75$ cm³</p> <p>$V_{ABCG} = \frac{1}{3} \times \frac{5 \times 3}{2} \times 4 = 10$ cm³</p> <p>Assim: $V_{FEDGBA} = 75 - 10 = 65$ cm³</p>
6	<p>$A = \begin{bmatrix} 1 \\ 2 \\ 13 \end{bmatrix}$</p> <p>$B = [1 \ 2 \ 13]$</p> <p>$A \times B = \begin{bmatrix} 1 & 2 & 13 \\ 2 \times 1 & 2 \times 2 & 2 \times 13 \\ 13 \times 1 & 13 \times 2 & 13 \times 13 \end{bmatrix}$</p> <p>Determinante de $A \times B = 2 \times 13 \times \begin{vmatrix} 1 & 2 & 13 \\ 1 & 2 & 13 \\ 1 & 2 & 13 \end{vmatrix} = 0$</p>

7	 <p>Triângulo BCE</p> <p>Triângulo BDF</p> <p>Por semelhança de triângulos</p> $\frac{15}{100} = \frac{y}{400} \Rightarrow y = 60$ $V = y + 5 = 65 \text{ reais}$
8	$P(A) = \frac{20}{30}$ $B = \{k + 1, k + 2, \dots, 30\}, n(B) = 30 - k \Rightarrow P(B) = \frac{30 - k}{30}$ $1 = \frac{20}{30} + \frac{30 - k}{30} - \frac{1}{6} \Rightarrow k = 15$
9	 $3l = 6 \Rightarrow l = 2 \text{ cm, altura } h = \frac{2\sqrt{3}}{2} = \sqrt{3} \text{ cm}$ <p>Triângulos ABD e EBF semelhantes</p> $\frac{y}{\sqrt{3}} = \frac{1 - \frac{x}{2}}{1} \Rightarrow y = \sqrt{3} - \frac{\sqrt{3}}{2} x$ <p>Área $S = x \times y \Rightarrow S = -\frac{\sqrt{3}}{2} x^2 + \sqrt{3} x$</p> $S_{\text{máx}} \rightarrow x = \frac{-\sqrt{3}}{2 \left(\frac{-\sqrt{3}}{2} \right)} \Rightarrow x = 1 \text{ e } y = \sqrt{3} - \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$ $x = 1, y = \frac{\sqrt{3}}{2}$
10	$m(\widehat{CDF}) = m(\widehat{AFD}) = \alpha + \beta$ $\overline{AD} = \text{sen}(\widehat{AFD}) = \text{sen}(\alpha + \beta)$