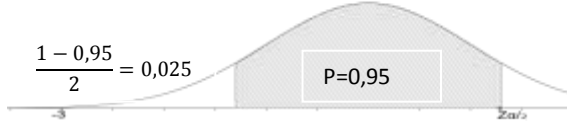
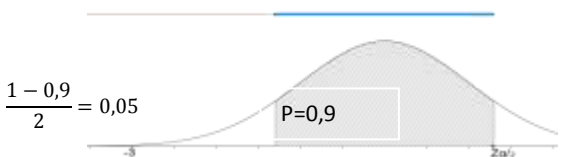
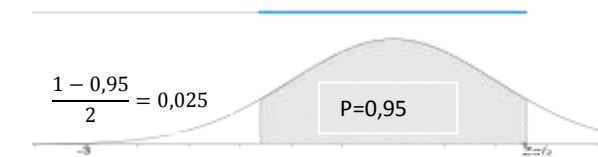

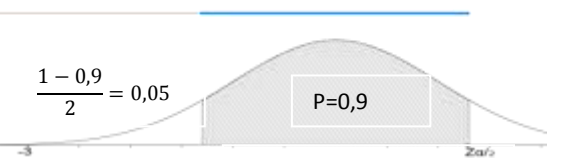
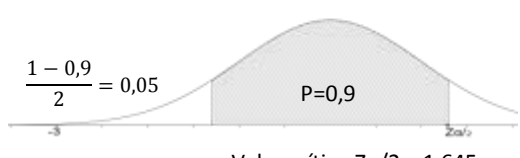
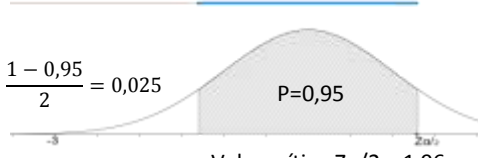
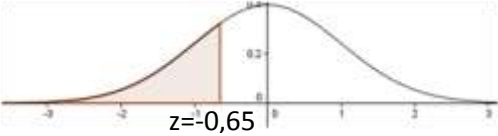
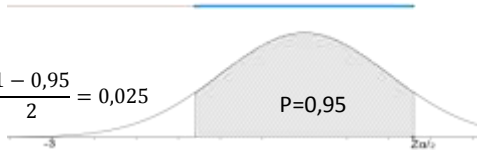


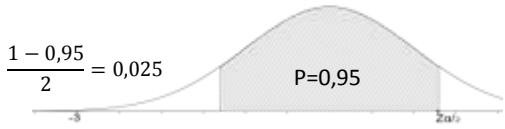
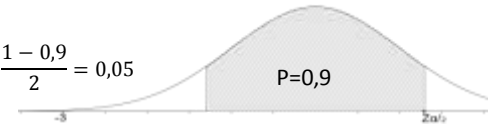
<p>1) <u>Datos</u> $\sigma=3$</p>	<p>$n=48 \quad \bar{X}=36$ a) $Ic=(\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n})=$ $=(36 - \frac{1,96 \cdot 3}{\sqrt{48}}, 36 + \frac{1,96 \cdot 3}{\sqrt{48}}) = (35,15 ; 36,85)$</p> <p>$P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ $P=0,95$</p> <p>Valor crítico $Z_{\alpha/2} = 1,96$</p>	<p>$P=0,95$</p>  <p>$\frac{1 - 0,9}{2} = 0,05$ $P=0,9$</p> <p>Valor crítico $Z_{\alpha/2} = 1,645$</p> <p>$\epsilon=1 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 1 = \frac{1,645 \cdot 3}{\sqrt{n}} \rightarrow \sqrt{n} = 1,645 \cdot 3$ $\rightarrow n=(4,935)^2=24,35$ Tomamos $n=25$ para que el error sea menor que 1</p>
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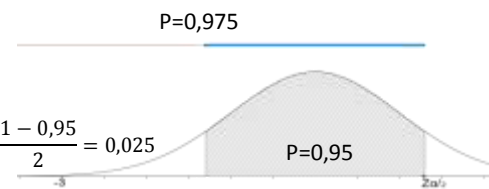
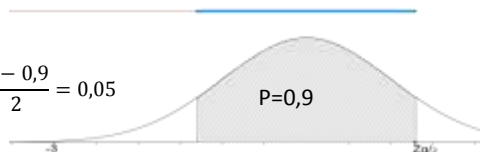
<p>2) <u>Datos</u> $\sigma=3$</p>	<p>a) $Ic=(\bar{X} - \epsilon, \bar{X} + \epsilon) = (16,33 ; 19,27)$</p> <table border="0"> <tr> <td>$\bar{X} - \epsilon = 16,33$</td> <td>$-\bar{X} + \epsilon = -16,33$</td> </tr> <tr> <td>$\bar{X} + \epsilon = 19,27$</td> <td>$\bar{X} + \epsilon = 19,27$</td> </tr> <tr> <td>$2\bar{X} = 16,33 + 19,27$</td> <td>$2\epsilon = -16,33 + 19,27$</td> </tr> <tr> <td>$\bar{X} = 17,8$</td> <td>$\epsilon = 1,47$</td> </tr> </table> <p>$\epsilon=1,47 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 1 = \frac{1,96 \cdot 3}{\sqrt{n}} \rightarrow$ $\sqrt{n} = 1,96 \cdot 3 \rightarrow n=(5,88)^2=34,57$ Tomamos $n=35$ para que el error sea menor que 1,47</p>	$\bar{X} - \epsilon = 16,33$	$-\bar{X} + \epsilon = -16,33$	$\bar{X} + \epsilon = 19,27$	$\bar{X} + \epsilon = 19,27$	$2\bar{X} = 16,33 + 19,27$	$2\epsilon = -16,33 + 19,27$	$\bar{X} = 17,8$	$\epsilon = 1,47$	<p>$P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ $P=0,95$</p> <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>b) $n=64$ $\epsilon = Z_{\alpha/2} \sigma/\sqrt{n} = 1,96 \cdot 3/\sqrt{64} = 0,735$</p>
$\bar{X} - \epsilon = 16,33$	$-\bar{X} + \epsilon = -16,33$									
$\bar{X} + \epsilon = 19,27$	$\bar{X} + \epsilon = 19,27$									
$2\bar{X} = 16,33 + 19,27$	$2\epsilon = -16,33 + 19,27$									
$\bar{X} = 17,8$	$\epsilon = 1,47$									

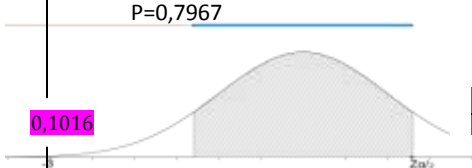
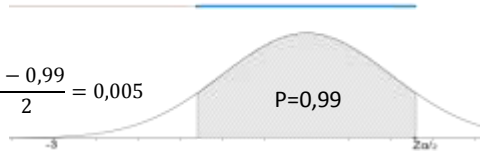
<p>3) <u>Datos</u> $\sigma=16$</p>	<p>a) $n=625; \bar{X}=169$ $Ic=(\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n})=$ $=(169 - \frac{2,325 \cdot 16}{\sqrt{625}}, 169 + \frac{2,325 \cdot 16}{\sqrt{625}}) =$ $(167,512 ; 170,488)$</p> <p>$P=0,99$</p>  <p>$\frac{1 - 0,98}{2} = 0,01$ $P=0,98$</p> <p>Valor crítico $Z_{\alpha/2} = 2,325$</p>	<p>b)</p> <p>$P=0,95$</p>  <p>$\frac{1 - 0,9}{2} = 0,05$ $P=0,9$</p> <p>Valor crítico $Z_{\alpha/2} = 1,645$</p> <p>$\epsilon=4 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 4 = \frac{1,645 \cdot 16}{\sqrt{n}} \rightarrow$ $\sqrt{n} = 1,645 \cdot 16/4 \rightarrow n=(6,58)^2=43,29$ Tomamos $n=44$ para que el error sea menor que 4</p>
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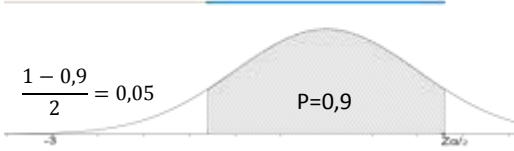
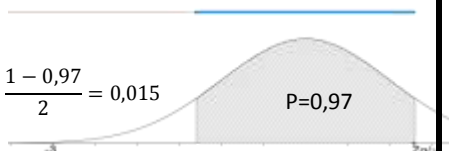
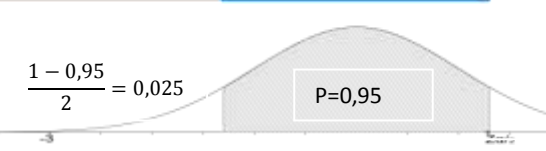
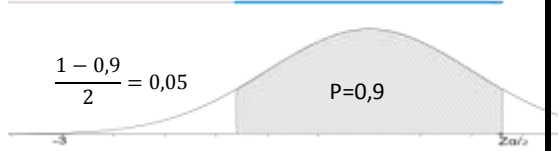
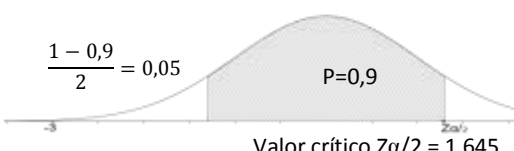
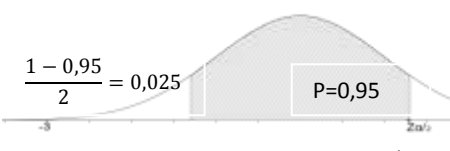

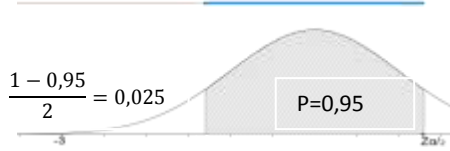
<p>4)</p> <p>$P=0,95$</p>  <p>$\frac{1 - 0,9}{2} = 0,05$ $P=0,9$</p> <p>Valor crítico $Z_{\alpha/2} = 1,645$</p> <p>$\epsilon=3,92 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 3,92 = \frac{1,96 \cdot \sigma}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot \sigma}{3,92} \rightarrow n_1=0,25\sigma^2$</p>	<p>$P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ $P=0,95$</p> <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>$\epsilon=7,84 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 7,84 = \frac{1,645 \cdot \sigma}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,645 \cdot \sigma}{7,84} \rightarrow n_2=0,044\sigma^2$</p>	<p>$n_1=n_2+7500$</p> <p>$0,25\sigma^2=0,044\sigma^2+7500$ $(0,25-0,044) \sigma^2=7500$ $\sigma^2=7500/0,206=36407,766$ $\sigma=190,8$ $n_1=0,25 \cdot 36407,766=9101,9$ $n_1=9102$ $n_2=0,044 \cdot 36407,766=1601,9$ $n_2=1602$</p>
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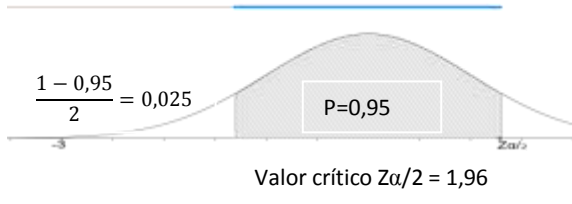
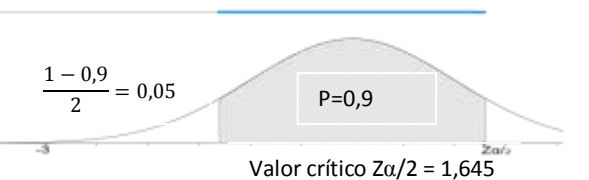
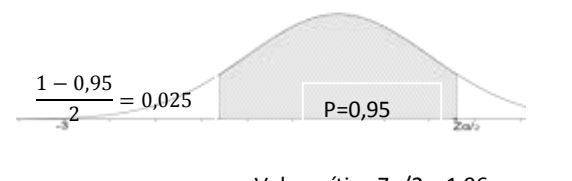
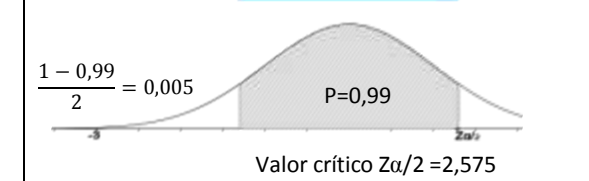

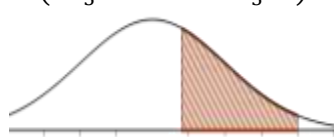
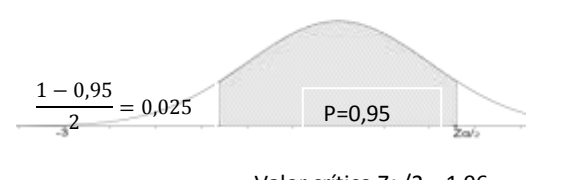
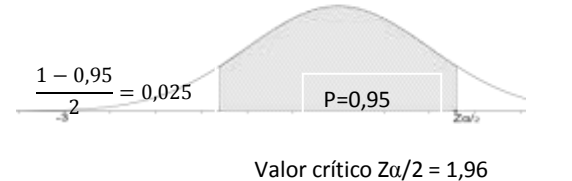
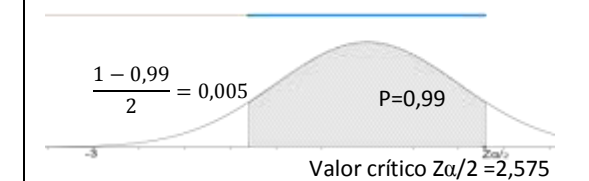
<p>5) <u>Datos</u> $\mu=3,5$ $\sigma=1,4$ $n=49$</p>	<p>a) $\bar{X} \rightarrow N(3,5 ; 1,4/\sqrt{49})=N(3,5 ; 0,2)$</p> $P(\bar{X} < 3,37) = p\left(\frac{\bar{x}-3,5}{0,2} < \frac{3,37-3,5}{0,2}\right) = p(Z < -0,65)$ $= 1 - 0,7422 = 0,2578$ 	<p>b) $\bar{X}=3,42$ $P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$</p> <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> $Ic = (\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n}) =$ $= (3,42 - \frac{1,96 \cdot 1,4}{\sqrt{49}} ; 3,42 + \frac{1,96 \cdot 1,4}{\sqrt{49}}) = (3,028 ; 3,812)$
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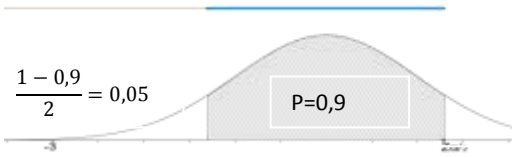
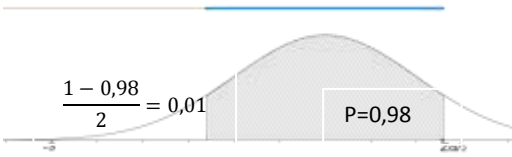
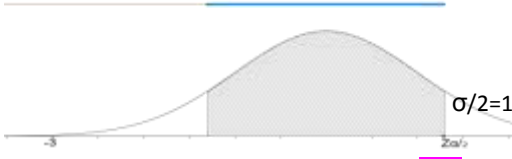
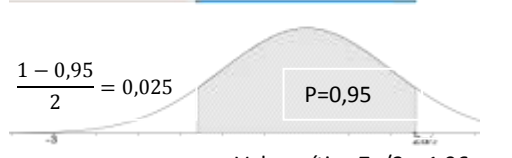
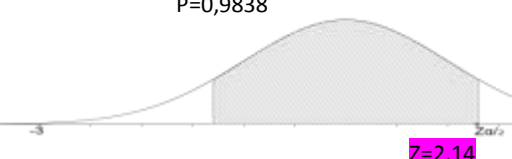
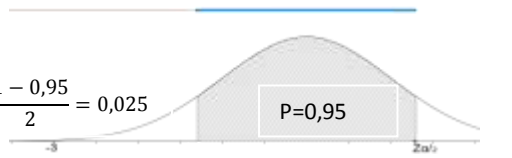
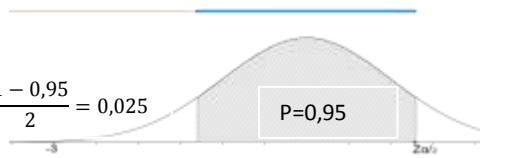
<p>6) <u>Datos</u> $\sigma=1940$</p>	<p>a) $P=0,975$</p> <p>$\epsilon=100$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$</p> <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> $\epsilon=100 = z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 100 = \frac{1,96 \cdot 1940}{\sqrt{n}} \rightarrow$ $\sqrt{n} = 1,96 \cdot 1940/100 \rightarrow n = (38,024)^2 = 1445,8$ <p>Tomamos $n=1446$ para que el error sea menor que 100</p>	<p>b) $n=225$ $P=0,95$</p> <p>$\bar{X}=12415$</p>  <p>$\frac{1 - 0,9}{2} = 0,05$</p> <p>Valor crítico $Z_{\alpha/2} = 1,645$</p> $Ic = (\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n}) =$ $= (12415 - \frac{1,96 \cdot 1940}{\sqrt{225}}, 12415 - \frac{1,96 \cdot 1940}{\sqrt{225}}) =$ <p>$(12161,5 ; 12668,5)$</p>
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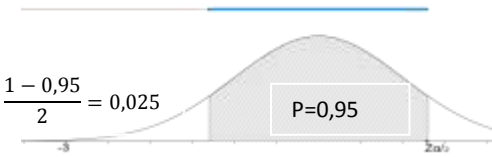
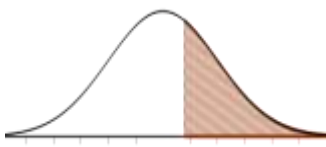
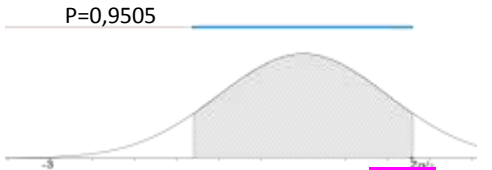
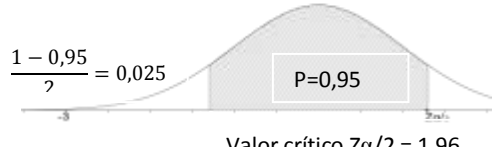

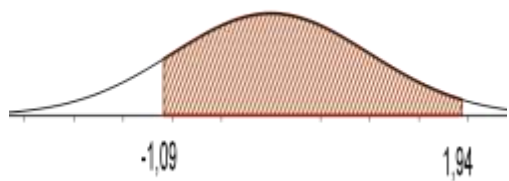
<p>7) <u>Datos</u> $\sigma=0,4$</p>	<p>$n=400$ $\bar{X}=1,75$</p> $Ic = (\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n}) =$ $= (1,75 - \frac{1,96 \cdot 0,4}{\sqrt{400}}, 1,75 + \frac{1,96 \cdot 0,4}{\sqrt{400}}) = (1,7108 ; 1,7892)$  <p>$P=0,975$</p> <p>$\frac{1 - 0,95}{2} = 0,025$</p> <p>Valor crítico $Z_{\alpha/2} = 1,96$</p>	<p>$P=0,95$</p>  <p>$\frac{1 - 0,9}{2} = 0,05$</p> <p>Valor crítico $Z_{\alpha/2} = 1,645$</p> $\epsilon=0,02 = z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 0,02 = \frac{1,645 \cdot 0,4}{\sqrt{n}} \rightarrow$ $\sqrt{n} = 1,645 \cdot 0,4/0,02 \rightarrow n = (32,9)^2 = 1082,41$ <p>Tomamos $n=1083$ para que el error sea menor que 0,02</p>
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<p>8) <u>Datos</u> $\sigma=210$ $n=64$</p>	<p>$P(\bar{X}-\mu \geq 22) = 1 - p(\bar{X}-\mu < 22) = 1 - 2 \cdot 0,1016$</p> $\epsilon=22 = z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 22 = \frac{z_{\alpha/2} \cdot 210}{\sqrt{64}} \rightarrow z_{\alpha/2} = \frac{22 \cdot \sqrt{64}}{210}$ <p>$Z_{\alpha/2}=0,83$</p>  <p>$P=0,7967$</p> <p>$\frac{1 - 0,7967}{2} = 0,1016$</p> <p>Valor crítico $Z_{\alpha/2} = 0,83$</p> <p>$P(\bar{X}-\mu \geq 22) = 2 \cdot 0,1016 = 0,2032$</p>	<p>$\bar{X}=1532$ $P=0,995$</p>  <p>$\frac{1 - 0,99}{2} = 0,005$</p> <p>Valor crítico $Z_{\alpha/2} = 2,575$</p> $Ic = (\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n}) =$ $= (1532 - \frac{2,575 \cdot 210}{\sqrt{64}}, 1532 + \frac{2,575 \cdot 210}{\sqrt{64}}) =$ <p>$(1464,4 ; 1599,6)$</p>
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<p>9)</p> <p>Datos $\sigma=2,8$</p>	<p style="text-align: center;">$P=0,95$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,645$</p> $\bar{x} = \frac{26 + 27,5 + 31 + 28 + 25,5 + 30,5 + 32 + 31,5}{8} = 29$ <p>$Ic = (\bar{X} - z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + z_{\alpha/2} \sigma / \sqrt{n}) =$ $(29 - \frac{1,645 \cdot 2,8}{\sqrt{8}}, 29 + \frac{1,645 \cdot 2,8}{\sqrt{8}}) = (27,37 ; 30,62)$</p>	<p style="text-align: center;">$P=0,985$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 2,17$</p> <p>$\epsilon = 0,9 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 0,9 = \frac{2,17 \cdot 2,8}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{2,17 \cdot 2,8}{0,9} \rightarrow n = 6,75^2 = 45,57$ $n=46$</p> <p>Tomamos $n=46$ para que el error sea menor que 0,9</p>								
<p>10)</p> <p>Datos $\sigma=45$</p>	<p>a) $Ic = (\bar{X} - \epsilon, \bar{X} + \epsilon) = (251,6 ; 271,2)$</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">$\bar{X} - \epsilon = 251,6$</td> <td style="text-align: center;">$-\bar{X} + \epsilon = -251,6$</td> </tr> <tr> <td style="text-align: center;">$\bar{X} + \epsilon = 271,2$</td> <td style="text-align: center;">$\bar{X} + \epsilon = 271,2$</td> </tr> <tr> <td style="text-align: center;">$2\bar{X} = 251,6 + 271,2$</td> <td style="text-align: center;">$2\epsilon = -251,6 + 271,2$</td> </tr> <tr> <td style="text-align: center;">$\bar{X} = 261,4$</td> <td style="text-align: center;">$\epsilon = 9,8$</td> </tr> </table> <p style="text-align: center;">$P=0,975$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,96$</p>	$\bar{X} - \epsilon = 251,6$	$-\bar{X} + \epsilon = -251,6$	$\bar{X} + \epsilon = 271,2$	$\bar{X} + \epsilon = 271,2$	$2\bar{X} = 251,6 + 271,2$	$2\epsilon = -251,6 + 271,2$	$\bar{X} = 261,4$	$\epsilon = 9,8$	<p>$\epsilon = 9,8 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 9,8 = \frac{1,96 \cdot 45}{\sqrt{n}} \rightarrow$ $\sqrt{n} = 1,96 \cdot 45 / 9,8 \rightarrow n = 9^2 = 81$</p> <p>b) $n=64$</p> <p style="text-align: center;">$P=0,95$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,645$</p> <p>$\epsilon = z_{\alpha/2} \sigma / \sqrt{n} = 1,645 \cdot 45 / \sqrt{64} = 9,25$</p>
$\bar{X} - \epsilon = 251,6$	$-\bar{X} + \epsilon = -251,6$									
$\bar{X} + \epsilon = 271,2$	$\bar{X} + \epsilon = 271,2$									
$2\bar{X} = 251,6 + 271,2$	$2\epsilon = -251,6 + 271,2$									
$\bar{X} = 261,4$	$\epsilon = 9,8$									
<p>11)</p> <p>Datos $\sigma=3000$ $n=100$ $\bar{X}=48000$</p>	<p style="text-align: center;">$P=0,95$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,645$</p> <p>$Ic = (\bar{X} - z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + z_{\alpha/2} \sigma / \sqrt{n}) =$ $(48000 - \frac{1,645 \cdot 3000}{\sqrt{100}}, 48000 + \frac{1,645 \cdot 3000}{\sqrt{100}}) =$ $(47506,5 ; 48493,5)$</p>	<p style="text-align: center;">$P=0,975$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>$\epsilon = 1000 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 1000 = \frac{1,96 \cdot 3000}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot 3000}{1000} \rightarrow n = 5,88^2 = 34,57$ $n=35$</p> <p>Tomamos $n=35$ para que el error sea menor que 1000</p>								
<p>12)</p> <p>Datos $\sigma=3$ $n=121$</p>	<p>$P(\bar{X} - \mu \geq 0,5) = 1 - p(\bar{X} - \mu < 0,5) =$</p> <p>$\epsilon = 0,5 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 0,5 = \frac{Z_{\alpha/2} \cdot 3}{\sqrt{121}} \rightarrow Z_{\alpha/2} = \frac{0,5 \cdot \sqrt{121}}{3}$</p> <p>$Z_{\alpha/2} = 1,83$ $P = 0,9664$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,83$</p> <p>$P = P(\bar{X} - \mu \geq 0,5) = 2 \cdot (1 - 0,9664) = 0,0612$</p>	<p style="text-align: center;">$P=0,975$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>$\epsilon = 1000 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 1000 = \frac{1,96 \cdot 3000}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot 3000}{1000} \rightarrow n = 5,88^2 = 34,57$ $n=35$</p> <p>Tomamos $n=35$ para que el error sea menor que 1000</p>								

<p>13) Datos $\sigma=15$ $n=400$ $\bar{X}=3$</p>	<p>a) $lc=(\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n})=$ $= (3 - \frac{1,96 \cdot 15}{\sqrt{400}}, 3 + \frac{1,96 \cdot 15}{\sqrt{400}}) = (1,53 ; 4,47)$ $P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ Valor crítico $Z_{\alpha/2} = 1,96$</p>	<p>$P=0,95$</p>  <p>$\frac{1 - 0,9}{2} = 0,05$ Valor crítico $Z_{\alpha/2} = 1,645$ $\epsilon=3 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 3 = \frac{1,645 \cdot 15}{\sqrt{n}} \rightarrow \sqrt{n} = 1,645 \cdot 15/3 \rightarrow n=8,225^2=67,65$ Tomamos $n=68$ para que el error sea menor que 3</p>
<p>14) Datos $\sigma=0,09$</p>	<p>$P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ Valor crítico $Z_{\alpha/2} = 1,96$ $\bar{x} = \frac{1,5 + 1,6 + 1,1 + 0,9 \cdot 2 + 1 + 1,6 + 1,4 + 1,2 + 1,1}{10} = 1,23$ $lc=(\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n})=$ $(1,23 - \frac{1,96 \cdot 0,09}{\sqrt{10}}, 1,23 + \frac{1,96 \cdot 0,09}{\sqrt{10}}) = (1,17 ; 1,28)$</p>	<p>$P=0,995$</p>  <p>$\frac{1 - 0,99}{2} = 0,005$ Valor crítico $Z_{\alpha/2} = 2,575$ $\epsilon=0,1 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 0,1 = \frac{2,575 \cdot 0,09}{\sqrt{n}} \rightarrow \sqrt{n} = \frac{2,575 \cdot 0,09}{0,1} \rightarrow n=2,31^2=5,37$ $n=6$ Tomamos $n=6$ para que el error sea menor que 0,1 con probabilidad mayor que 0,99</p>
<p>15) $X \rightarrow N(98,15)$ $n=9$</p>	<p>$\bar{X} \rightarrow N(98,15/\sqrt{9}) = N(98,5)$ $P(\bar{X} > 100) = p(\frac{\bar{X} - 98}{5} > \frac{100 - 98}{5}) = p(z > 0,4) =$ $= 1 - 0,6554 = 0,3446$</p> 	<p>$p(\bar{X} < 104 / \bar{X} > 100) = \frac{p(100 < \bar{X} < 104)}{p(100 < \bar{X})}$ $= p(100 < \bar{X} < 104) = p(\frac{100 - 98}{5} < z < \frac{104 - 98}{5}) =$ $p(0,4 < z < 1,2) =$ $= 0,8849 - 0,6554 =$ $0,2295$</p> 
<p>16) Datos $X \rightarrow N(\theta, 10)$</p>	<p>$P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ Valor crítico $Z_{\alpha/2} = 1,96$</p>	<p>a) $\bar{X}=110; n=9$ $lc=(\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n})=$ $(110 - \frac{1,96 \cdot 10}{\sqrt{9}}, 110 + \frac{1,96 \cdot 10}{\sqrt{9}}) = (103,47 ; 116,53)$ b) $\epsilon=5 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 5 = \frac{1,96 \cdot 10}{\sqrt{n}} \rightarrow \sqrt{n} = \frac{1,96 \cdot 10}{5} \rightarrow n=3,92^2=15,37$ $n=16$ Tomamos $n=16$ para que el error sea menor que 5 con probabilidad mayor que 0,95</p>
<p>17) Datos $X \rightarrow N(\mu, 10)$ $\bar{X}=19;$ $n=256$</p>	<p>$P=0,975$</p>  <p>$\frac{1 - 0,95}{2} = 0,025$ Valor crítico $Z_{\alpha/2} = 1,96$ a) $lc=(\bar{X} - z_{\alpha/2} \sigma/\sqrt{n}, \bar{X} + z_{\alpha/2} \sigma/\sqrt{n})=$ $(19 - \frac{1,96 \cdot 10}{\sqrt{256}}, 19 + \frac{1,96 \cdot 10}{\sqrt{256}}) = (17,775 ; 20,225)$ $\epsilon = \frac{1,96 \cdot 10}{\sqrt{256}} = 1,225$</p>	<p>$P=0,995$</p>  <p>$\frac{1 - 0,99}{2} = 0,005$ Valor crítico $Z_{\alpha/2} = 2,575$ $\epsilon=1,225 = Z_{\alpha/2} \sigma/\sqrt{n} \rightarrow 1,225 = \frac{2,575 \cdot 10}{\sqrt{n}} \rightarrow \sqrt{n} = \frac{2,575 \cdot 10}{1,225} \rightarrow n=21,02^2=441,85$ $n=442$ a) Tomamos $n=442$ para que el error se mantenga al 0,99 de confianza.</p>

<p>18)</p> <p>Datos $X \rightarrow N(\mu, 0,5)$ $\bar{X} = 10,3$; $n = 9$</p>	<p style="text-align: center;">P=0,95</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,645$</p> <p>a) $Ic = (\bar{X} - z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + z_{\alpha/2} \sigma / \sqrt{n}) =$ $(10,3 - \frac{1,645 \cdot 0,5}{\sqrt{9}}, 10,3 + \frac{1,645 \cdot 0,5}{\sqrt{9}}) = (10,03 ; 10,57)$</p>	<p style="text-align: center;">P=0,99</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 2,325$</p> <p>b) $\epsilon = 0,2 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 0,2 = \frac{2,325 \cdot 0,5}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{2,325 \cdot 0,5}{0,2} \rightarrow n = 5,81^2 = 33,878$ n=34</p>
<p>19)</p> <p>Datos $\sigma = 320$ $n = 36$</p>	<p>a) $P(\bar{X} - \mu \geq 50) = 1 - p(\bar{X} - \mu < 50) =$ $\epsilon = 50 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 50 = \frac{z_{\alpha/2} \cdot 320}{\sqrt{36}} \rightarrow z_{\alpha/2} = \frac{50 \cdot \sqrt{36}}{320}$ $Z_{\alpha/2} = 0,94$ $P = 0,8264$</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 0,94$</p> <p>$P = P(\bar{X} - \mu \geq 0,5) = 2 \cdot (1 - 0,8264) = 0,3472$</p>	<p style="text-align: center;">P=0,975</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>b) $Ic = (\bar{X} - z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + z_{\alpha/2} \sigma / \sqrt{n}) =$ $(4820 - \frac{1,96 \cdot 320}{\sqrt{36}}, 4820 + \frac{1,96 \cdot 320}{\sqrt{36}}) =$ (4715,47 ; 4924,53)</p>
<p>20)</p> <p>Datos $\sigma = 5$ $n = 100$</p>	<p>$Ic = (\bar{X} - \epsilon, \bar{X} + \epsilon) = (173,42 ; 175,56)$ $\bar{X} - \epsilon = 173,42$ $-\bar{X} + \epsilon = -173,42$ $\bar{X} + \epsilon = 175,56$ $\bar{X} + \epsilon = 175,56$ $2\bar{X} = 173,42 + 175,56$ $2\epsilon = -173,42 + 175,56$ $\bar{X} = 174,49$ $\epsilon = 1,07$</p> <p>$\epsilon = 1,07 = \frac{Z_{\alpha/2} \cdot 5}{\sqrt{100}} \rightarrow Z_{\alpha/2} = \frac{1,07 \cdot \sqrt{100}}{5} \rightarrow Z_{\alpha/2} = 2,14$</p>	 <p style="text-align: right;">Z=2,14</p> <p>$\alpha/2 = 1 - 0,9838 = 0,0162$ $\alpha = 2 \cdot 0,0162 = 0,0324$ $1 - \alpha = 0,9676 \rightarrow 96,76\%$</p>
<p>21)</p> <p>Datos $X \rightarrow N(\mu, 0,5)$ $\bar{X} = 19,84$; $n = 4$</p>	<p style="text-align: center;">P=0,975</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,96$</p>	<p>a) $Ic = (\bar{X} - z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + z_{\alpha/2} \sigma / \sqrt{n}) =$ $(19,84 - \frac{1,96 \cdot 0,5}{\sqrt{4}}, 19,84 + \frac{1,96 \cdot 0,5}{\sqrt{4}}) =$ (19,35 ; 20,33)</p> <p>b) $\epsilon = 0,2 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 0,2 = \frac{1,96 \cdot 0,5}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot 0,5}{0,2} \rightarrow n = 4,9^2 = 24,01$ n=25</p> <p>Tomamos n=25 para que el error sea menor que 5 con probabilidad mayor que 0,95</p>
<p>22)</p> <p>Datos $X \rightarrow N(\mu, 0,5)$ $\bar{X} = 6$; $n = 100$</p>	<p style="text-align: center;">P=0,975</p>  <p style="text-align: center;">Valor crítico $Z_{\alpha/2} = 1,96$</p>	<p>c) $Ic = (\bar{X} - z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + z_{\alpha/2} \sigma / \sqrt{n}) =$ $(6 - \frac{1,96 \cdot 0,5}{\sqrt{100}}, 6 + \frac{1,96 \cdot 0,5}{\sqrt{100}}) =$ (5,902 ; 6,098)</p> <p>b) $\epsilon = 1 = z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 1 = \frac{1,96 \cdot 0,5}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot 0,5}{1} \rightarrow n = 0,98^2 = 0,9604$ n=1</p> <p>Tomamos n=1 para que el error sea menor que 1 con probabilidad mayor que 0,95</p>

<p>23) Datos $X \rightarrow N(\mu, 15)$ $n=9$</p>	<p>$\bar{X}=108$ $P=0,975$</p>  <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>a) $lc = (\bar{X} - Z_{\alpha/2} \sigma / \sqrt{n}, \bar{X} + Z_{\alpha/2} \sigma / \sqrt{n}) =$ $(108 - \frac{1,96 \cdot 15}{\sqrt{9}}, 108 + \frac{1,96 \cdot 15}{\sqrt{9}}) =$ (98,2 ; 117,8)</p>	<p>c) $\mu=110$</p> <p>$\bar{X} \rightarrow N(110, 15/\sqrt{9}) = N(110, 5)$</p> <p>$P(\bar{X} > 120) = p(\frac{\bar{X} - 110}{5} > \frac{120 - 110}{5}) = p(z > 2) =$ $= 1 - 0,9772 =$ 0,0228</p> 
<p>24) Datos $X \rightarrow N(\mu, 400)$ $n=100$</p>	<p>$\epsilon = 66 = \frac{Z_{\alpha/2} \cdot 20}{\sqrt{100}} \rightarrow Z_{\alpha/2} = \frac{66 \cdot \sqrt{100}}{40} \rightarrow Z_{\alpha/2} = 1,65$</p> <p>$P=0,9505$</p>  <p>$\alpha/2 = 1 - 0,9505 = 0,0495$ $\alpha = 2 \cdot 0,0495 = 0,099$ $1 - \alpha = 1 - 0,099 = 0,901 \rightarrow$ 90,1%</p>	<p>$P=0,975$</p>  <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>$\epsilon = 40 = Z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 40 = \frac{1,96 \cdot 20}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot 40}{40} \rightarrow n = 19,6^2 = 384,16$ n=385</p>
<p>25) Datos $\sigma=1,32$ $\epsilon \leq 0,5$ $1 - \alpha = 0,95$</p>	<p>$P=0,975$</p>  <p>Valor crítico $Z_{\alpha/2} = 1,96$</p> <p>$\epsilon = 0,5 = Z_{\alpha/2} \sigma / \sqrt{n} \rightarrow 0,5 = \frac{1,96 \cdot 1,32}{\sqrt{n}} \rightarrow$ $\sqrt{n} = \frac{1,96 \cdot 1,32}{0,5} \rightarrow n = 5,17^2 = 26,7$ n=27</p>	<p>b) a) $\mu=4,36$ $n=16$</p> <p>$\bar{X} \rightarrow N(4,36; 1,32/\sqrt{16}) = N(4,36; 0,33)$</p> <p>$p(4 < \bar{X} < 5) = p(\frac{4 - 4,36}{0,33} < z < \frac{5 - 4,36}{0,33}) =$ $= p(-1,09 < z < 1,94) = 0,9738 - (1 - 0,8621) =$ 0,8359</p> 
<p>26) $X \rightarrow N(35, 5)$ $N=100$</p>	<p>a) $\bar{X} \rightarrow N(35; 5/\sqrt{100}) = N(35; 0,5)$ b)</p> <p>$p(36 < \bar{X} < 37) = p(\frac{36 - 35}{0,5} < z < \frac{37 - 35}{0,5}) =$ $= p(2 < z < 4) = 1 - 0,9772 =$ 0,0228</p>	