FACULTAD DE SISTEMAS
ESTAMOS INNOVANDO

EXAMEN

PARCIAL#1

ESTADISTICA

Martes 29 de Septiembre de 2020

Nombre del Estudiante:
Matrícula:
Grupo: 851422 Estadística Industrial

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EXPEDIENTE : 15453

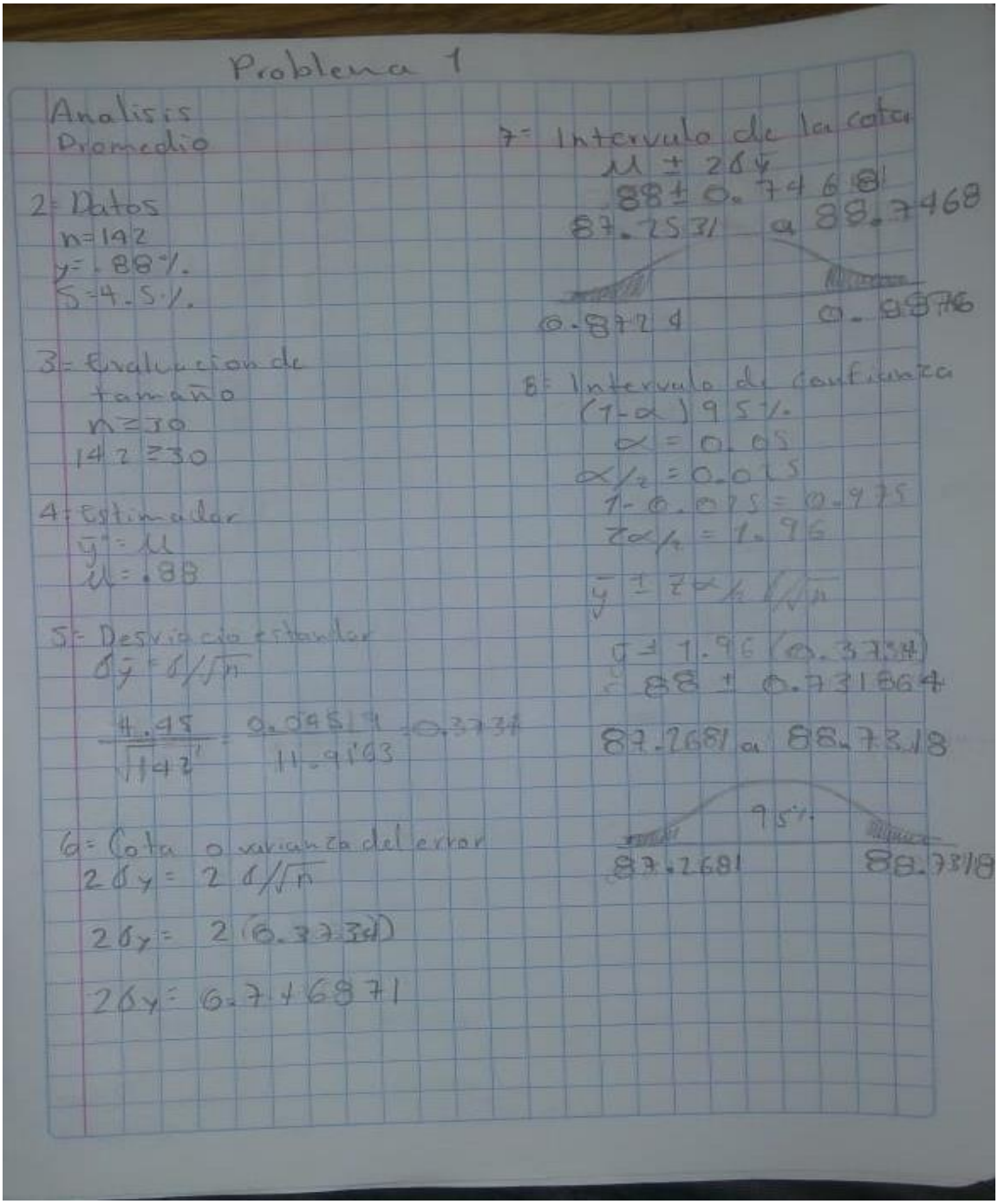
Universidad Autónoma de Coahuila

IDENTIFICACION DEL ESTUDIANTE

Credencial de Estudiante o INE

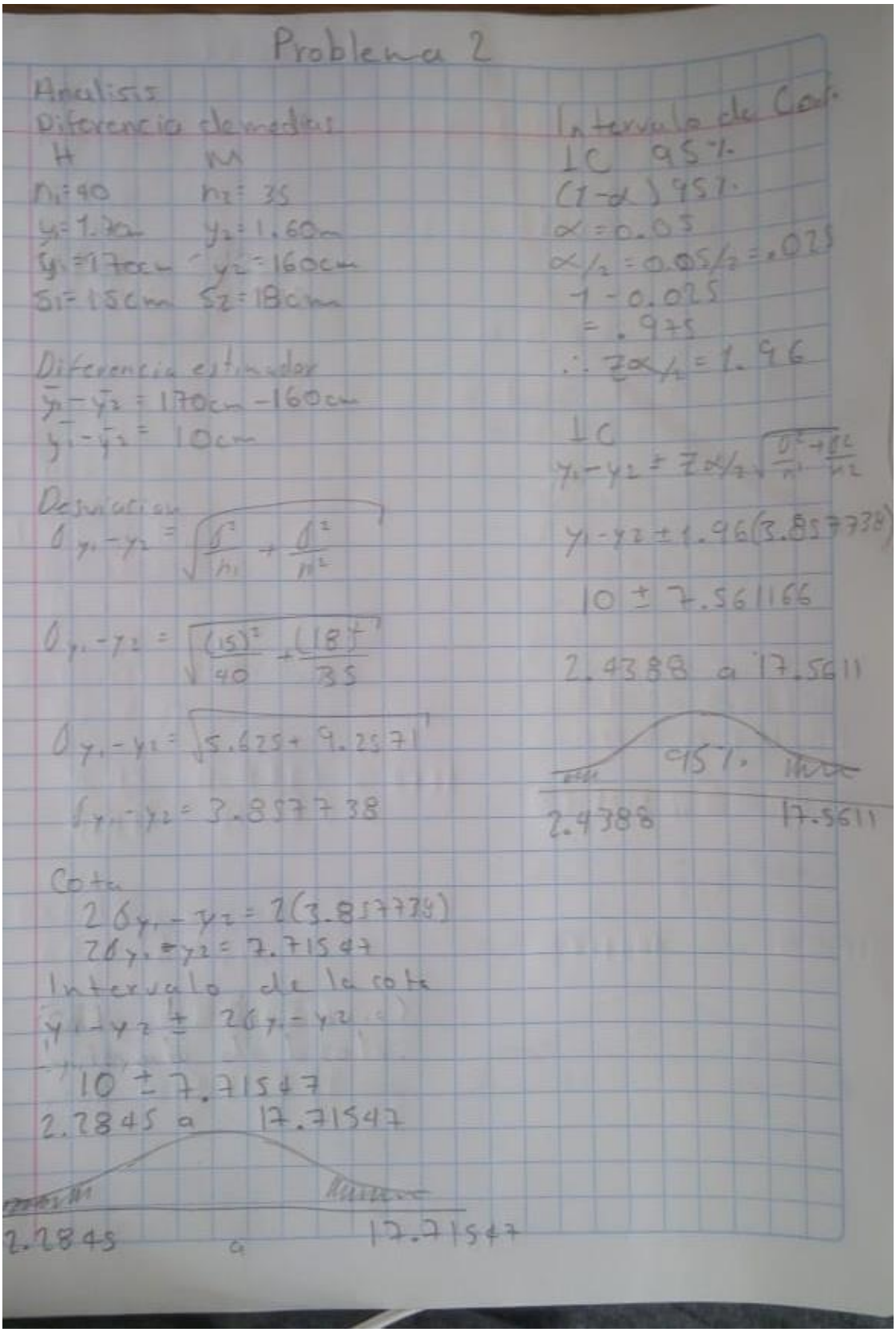
Evidencia de la Solución de Problemas

1



Evidencia de la Solución de Problemas

2



Problema 2

Analisis

Diferencia de medias

H	M
$n_1 = 40$	$n_2 = 35$
$\bar{y}_1 = 1.70m$	$\bar{y}_2 = 1.60m$
$s_{y_1} = 170cm$	$s_{y_2} = 160cm$
$S_1 = 15cm$	$S_2 = 18cm$

Diferencia estimador

$\bar{y}_1 - \bar{y}_2 = 170cm - 160cm$

$\bar{y}_1 - \bar{y}_2 = 10cm$

Desviacion

$$\sigma_{\bar{y}_1 - \bar{y}_2} = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$$

$$\sigma_{\bar{y}_1 - \bar{y}_2} = \sqrt{\frac{(15)^2}{40} + \frac{(18)^2}{35}}$$

$$\sigma_{\bar{y}_1 - \bar{y}_2} = \sqrt{5.625 + 9.2571}$$

$$\sigma_{\bar{y}_1 - \bar{y}_2} = 3.857738$$

Cota

$$2\sigma_{\bar{y}_1 - \bar{y}_2} = 2(3.857738)$$

$$2\sigma_{\bar{y}_1 - \bar{y}_2} = 7.715547$$

Intervalo de la cota

$\bar{y}_1 - \bar{y}_2 \pm 2\sigma_{\bar{y}_1 - \bar{y}_2}$

10 ± 7.715547

2.2845 a 17.71547

2.2845 a 17.71547

Intervalo de Conf.

IC 95%

$(1-\alpha)$ 95%

$\alpha = 0.05$

$\alpha/2 = 0.05/2 = .025$

$1 - 0.025 = .975$

$\therefore Z\alpha/2 = 1.96$

IC

$$\bar{y}_1 - \bar{y}_2 \pm Z\alpha/2 \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$$

$\bar{y}_1 - \bar{y}_2 \pm 1.96(3.857738)$

10 ± 7.561166

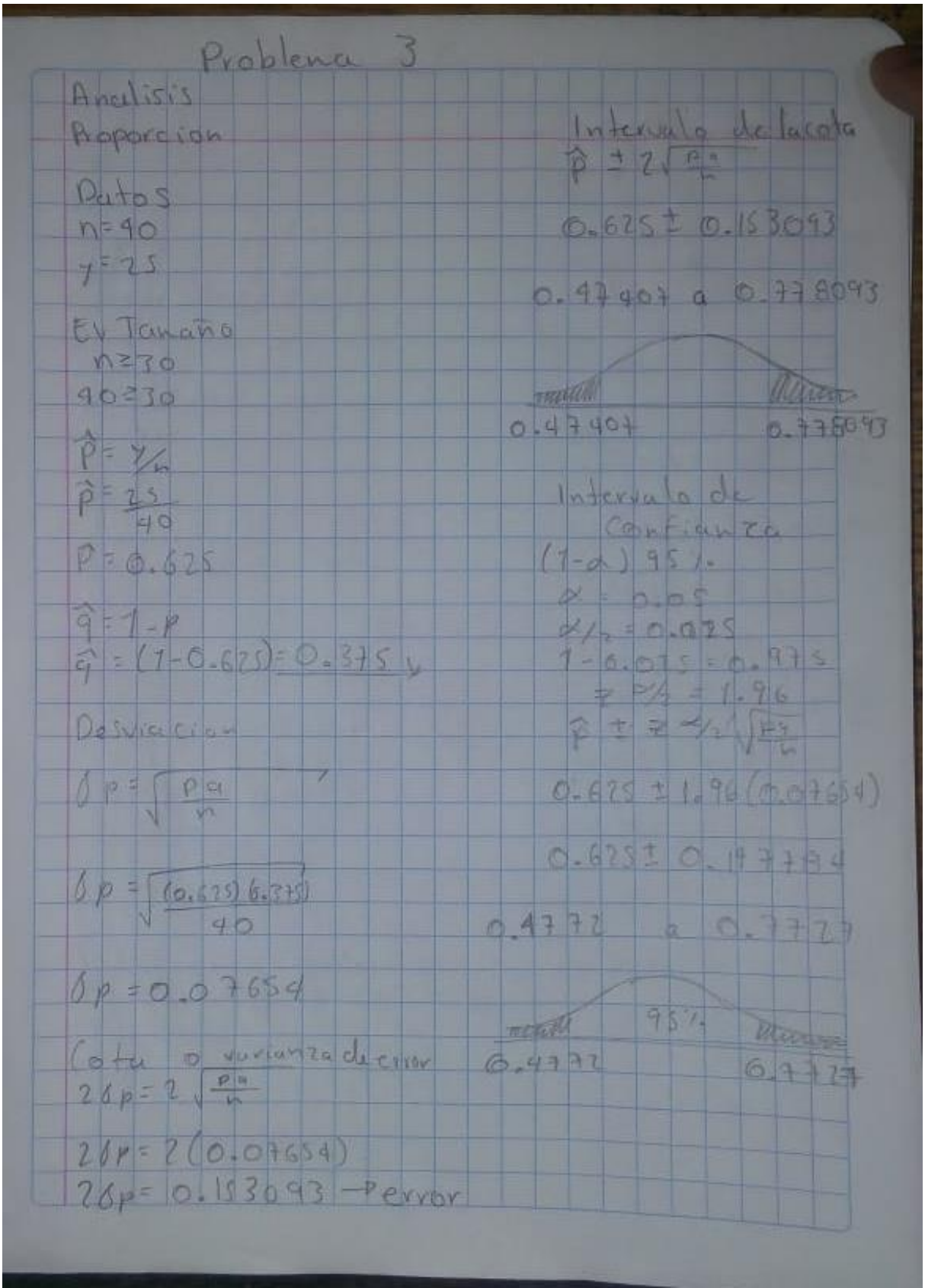
2.4388 a 17.5611

95% Inter

2.4388 17.5611

Evidencia de la Solución de Problemas

3



Problema 3

Analisis
Proporcion

Datos
$n = 90$
$y = 25$

Ev Tamaño
$n \geq 30$
$90 \geq 30$

$\hat{p} = y/n$

$\hat{p} = \frac{25}{40}$

$\hat{p} = 0.625$

$\hat{q} = 1 - p$

$\hat{q} = (1 - 0.625) = 0.375$

Desviacion

$\delta p = \sqrt{\frac{pq}{n}}$

$\delta p = \sqrt{\frac{(0.625)(0.375)}{40}}$

$\delta p = 0.07654$

Cota o varianza de error

$2\delta p = 2\sqrt{\frac{pq}{n}}$

$2\delta p = 2(0.07654)$

$2\delta p = 0.153093$ → Error

Intervalo de cota

$\hat{p} \pm 2\sqrt{\frac{pq}{n}}$

0.625 ± 0.153093

0.47407 a 0.778093

Intervalo de Confianza

$(1-\alpha)$ 95%

$\alpha = 0.05$

$\alpha/2 = 0.025$

$1 - 0.025 = 0.975$

$z_{\alpha/2} = 1.96$

$\hat{p} \pm z_{\alpha/2}\sqrt{\frac{pq}{n}}$

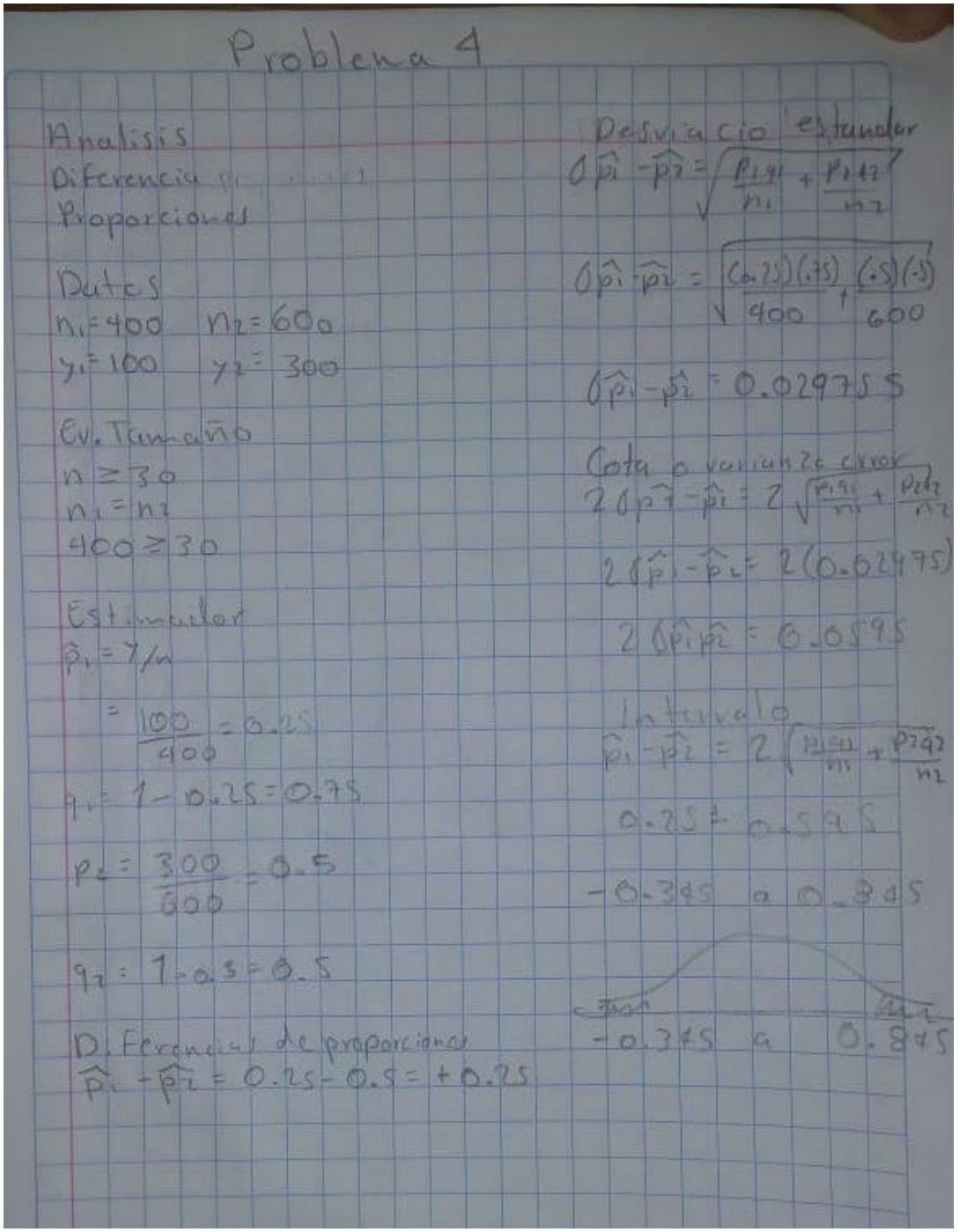
$0.625 \pm 1.96(0.07654)$

0.625 ± 0.147394

0.4772 a 0.7727

Evidencia de la Solución de Problemas

4



Problema 4

Analisis
Diferencia de Proporciones

Datos
$n_1 = 400$ $n_2 = 600$
$y_1 = 100$ $y_2 = 300$

Ev. Tamaño
$n \geq 30$
$n_1 = n_2$
$400 \geq 30$

Estimador
$\hat{p}_1 = y/n$
$= \frac{100}{400} = 0.25$
$q_1 = 1 - 0.25 = 0.75$
$p_2 = \frac{300}{600} = 0.5$
$q_2 = 1 - 0.5 = 0.5$

Diferencia de proporciones
$\hat{p}_1 - \hat{p}_2 = 0.25 - 0.5 = +0.25$

Desviacion estandar
$\sigma_{\hat{p}_1 - \hat{p}_2} = \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$
$\sigma_{\hat{p}_1 - \hat{p}_2} = \sqrt{\frac{(0.25)(.75)}{400} + \frac{(.5)(.5)}{600}}$
$\sigma_{\hat{p}_1 - \hat{p}_2} = 0.029755$

Cota o varianza error
$2\sigma_{\hat{p}_1 - \hat{p}_2} = 2\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$
$2(\hat{p}_1 - \hat{p}_2) = 2(0.02975)$
$2\sigma_{\hat{p}_1 - \hat{p}_2} = 0.0595$

Intervalo
$\hat{p}_1 - \hat{p}_2 = 2\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$
0.25 ± 0.595
-0.345 a 0.845

-0.345 a 0.845

Evidencia de la Solución de Problemas

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