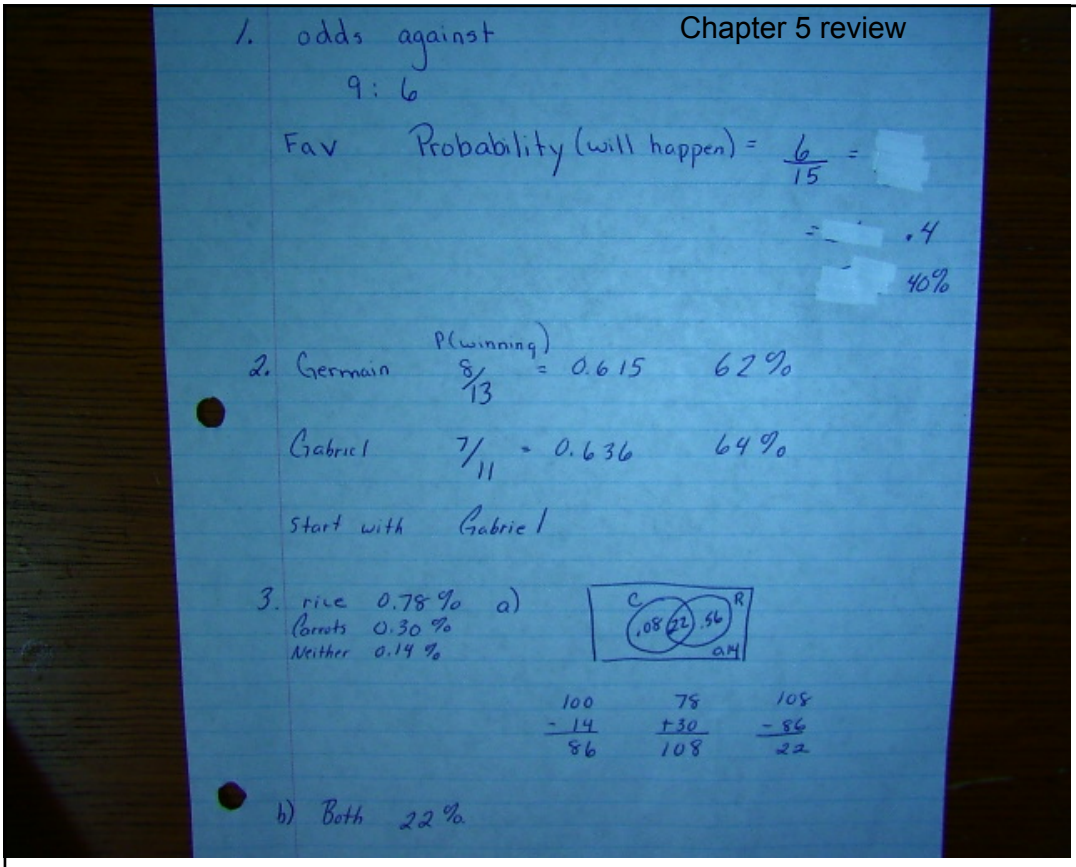
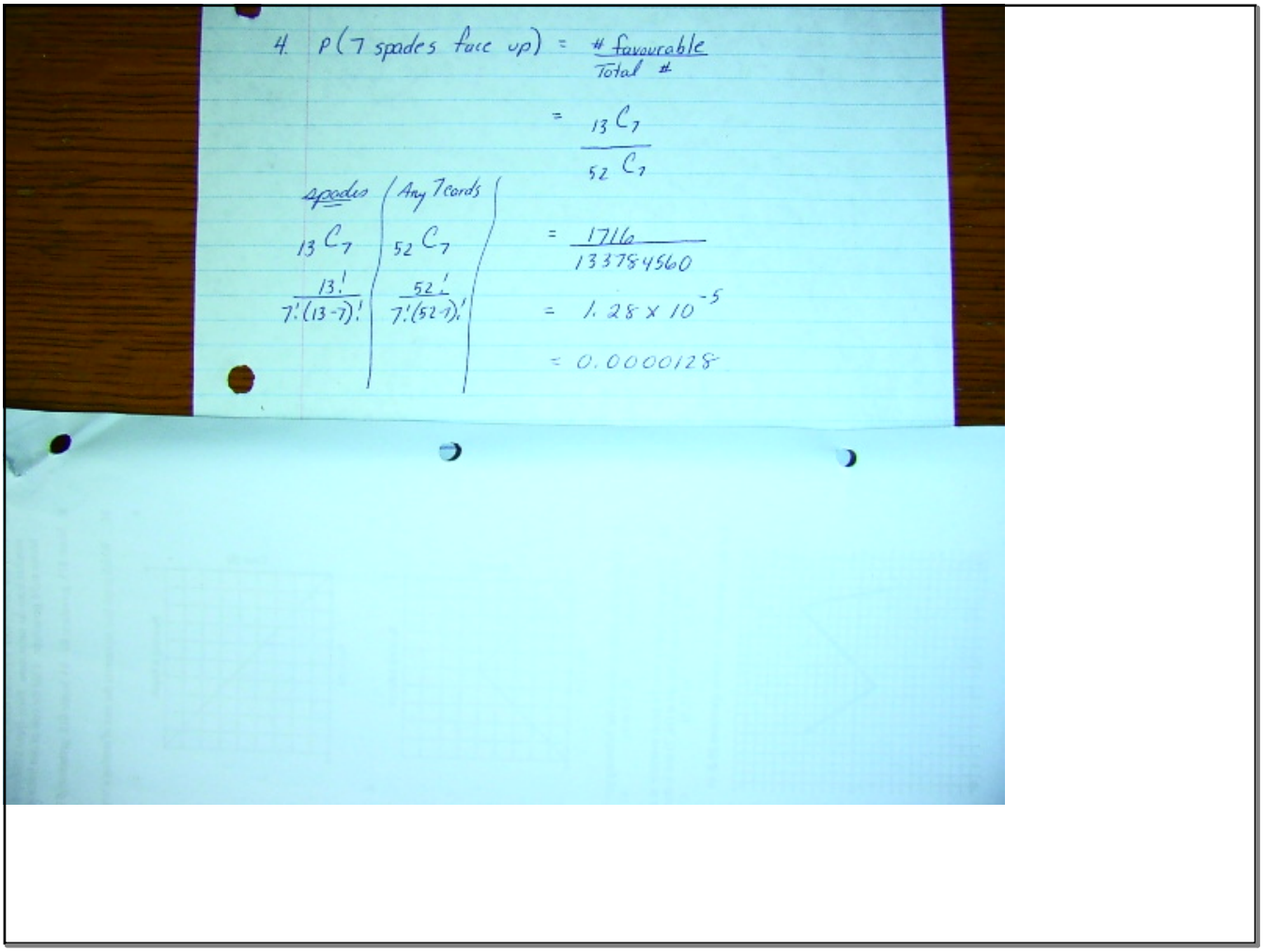
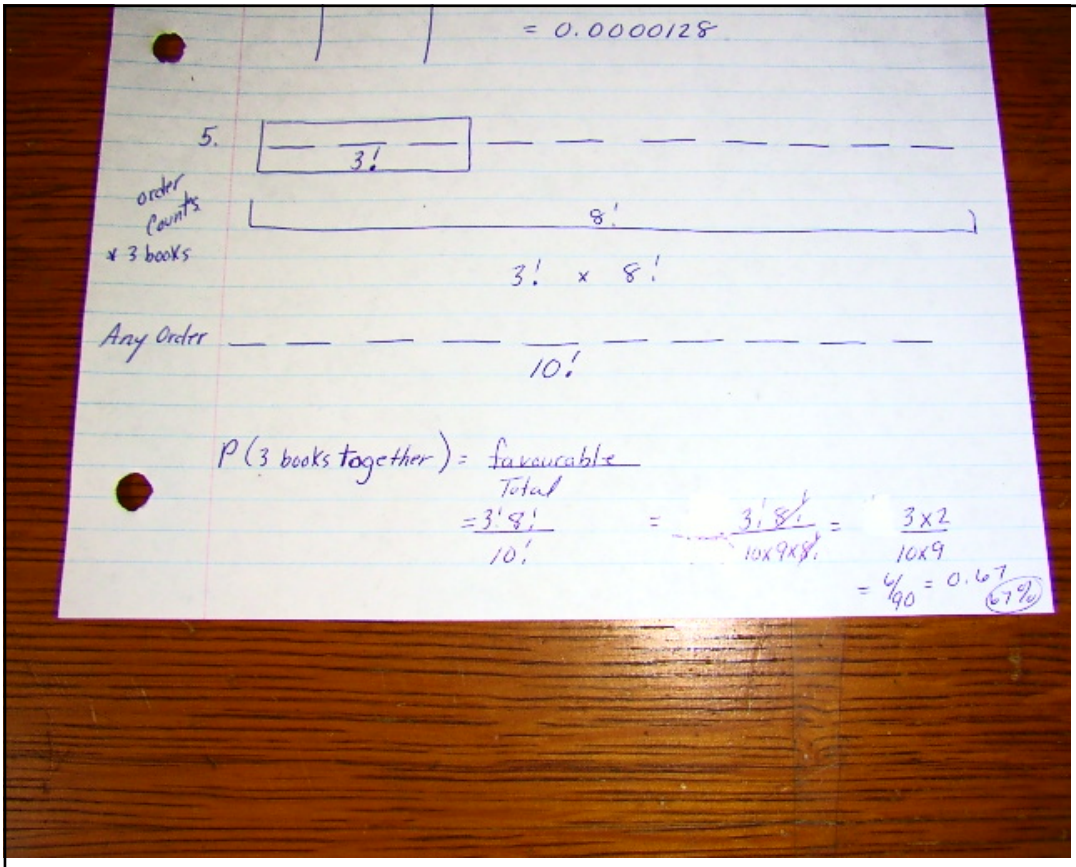
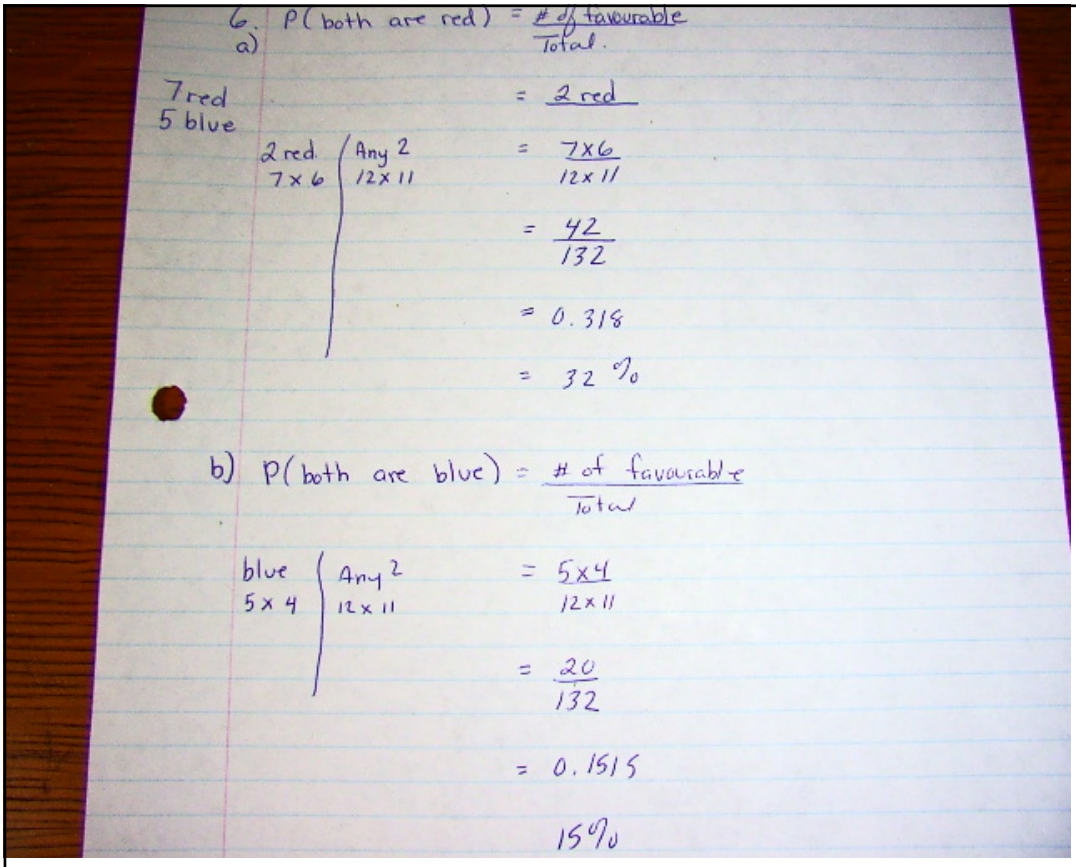

Chapter 5 review
1. odds against
9 : 6
Fav Probability (will happen) = 6/15 =
= .4
40%
2. Germain P(winning) 8/13 = 0.615 62%
Gabriel 7/11 = 0.636 64%
Start with Gabriel
3. rice 0.78%
Carrots 0.30%
Neither 0.14%
a)
C
R
.08
.22
.56
AM
100 - 14 = 86
78 + 30 = 108
108 - 86 = 22
b) Both 22%


4. P(7 spades face up) = # favourable / Total #
= 13C7 / 52C7
spades | Any 7 cards
13C7 | 52C7
13! / 7!(13-7)! | 52! / 7!(52-7)!
= 1716 / 133784560
= 1.28 × 10^-5
= 0.0000128


= 0.0000128
5.
3!
order counts
x 3 books
8!
3! x 8!
Any Order
10!
P(3 books together) = favourable / Total
= 3!8! / 10!
= 3!8! / 10x9x8!
= 3x2 / 10x9
= 6/90 = 0.67
6.7%



6. a) P(both are red) = # of favourable / Total

= 2 red

7 red
5 blue

2 red: 7 × 6
Any 2: 12 × 11

= 7×6 / 12×11

= 42 / 132

= 0.318

= 32 %

b) P(both are blue) = # of favourable / Total

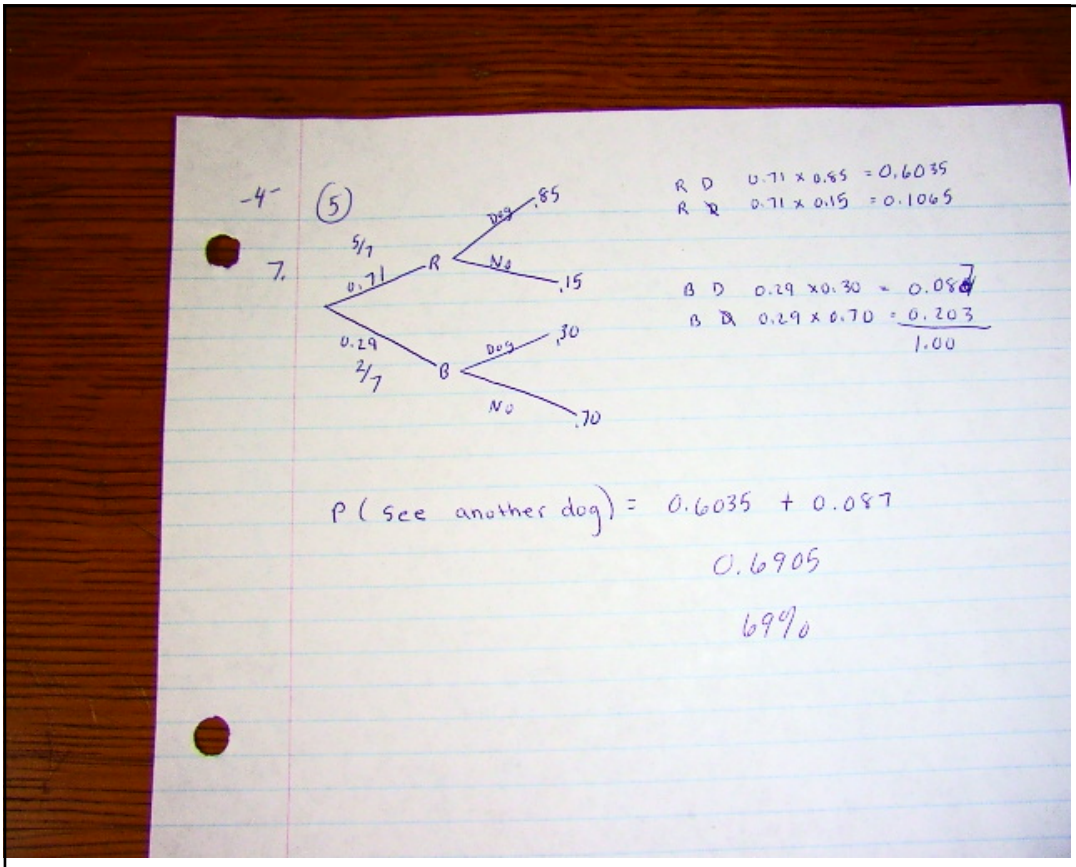
blue: 5 × 4
Any 2: 12 × 11

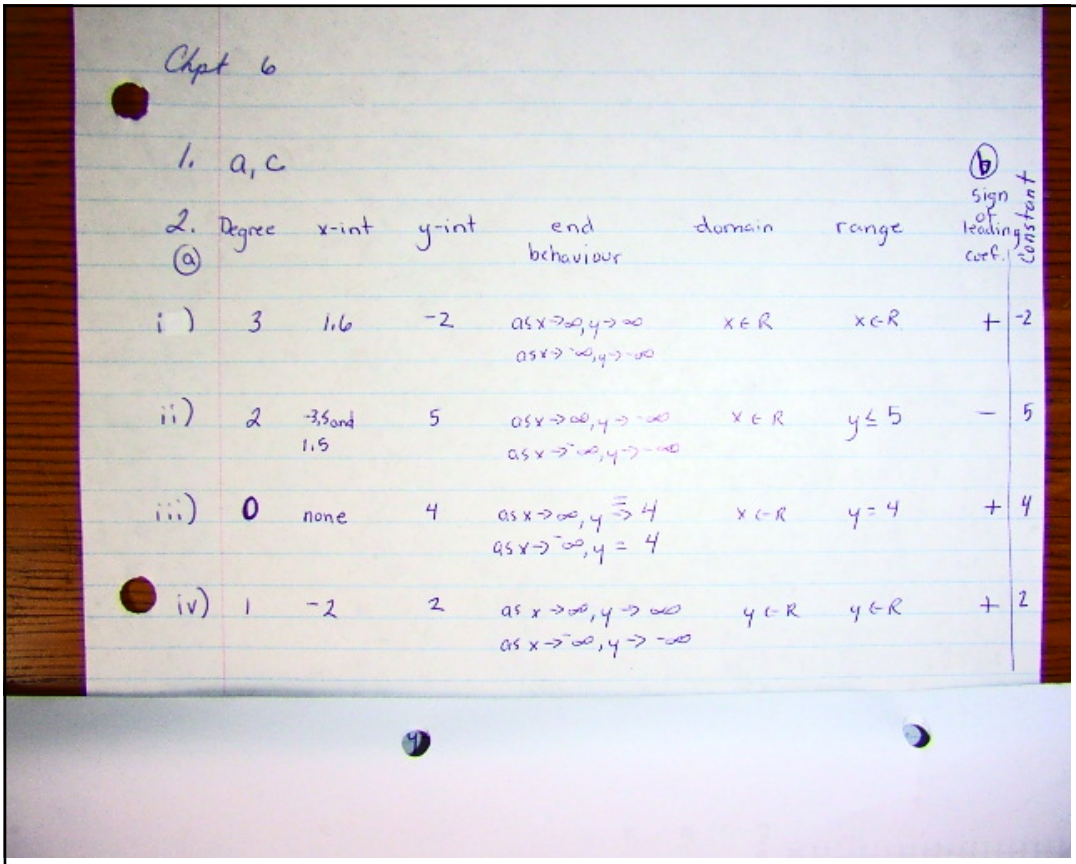
= 5×4 / 12×11

= 20 / 132

= 0.1515

15 %


-4-
(5)
7.
5/7
0.71
R
Dog
.85
No
.15
0.29
2/7
B
Dog
.30
No
.70
R D 0.71 x 0.85 = 0.6035
R D 0.71 x 0.15 = 0.1065
B D 0.29 x 0.30 = 0.087
B D 0.29 x 0.70 = 0.203
1.00
P (see another dog) = 0.6035 + 0.087
0.6905
69%

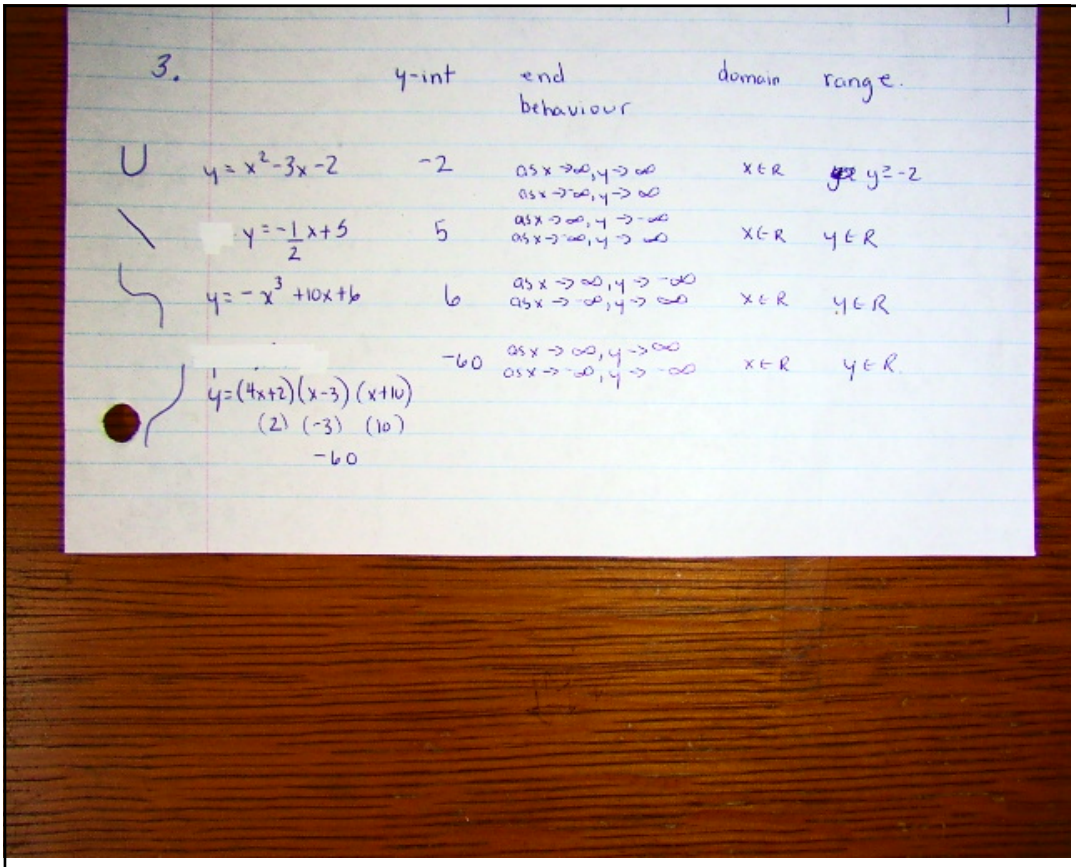


Chpt 6

1. a, c

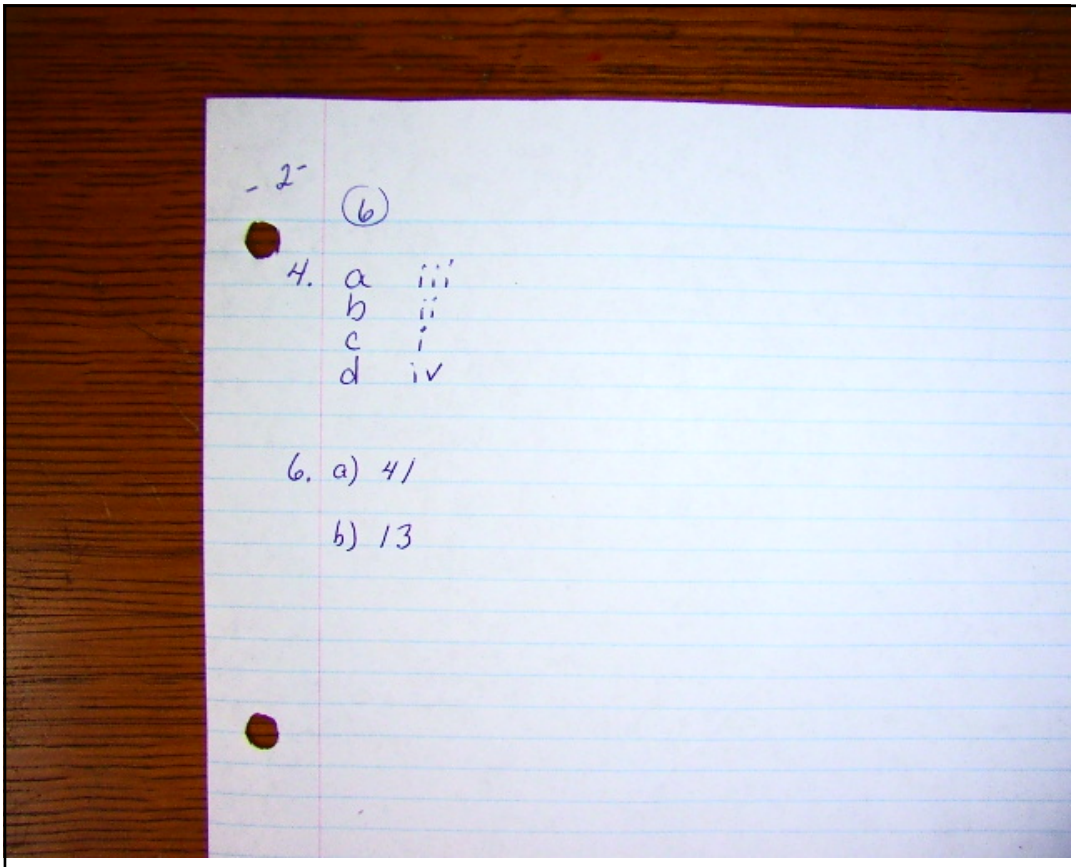
2.

	Degree	x-int	y-int	end behaviour	domain	range	ⓑ sign of leading coef.	constant
ⓐ i)	3	1.6	-2	as $x \to \infty, y \to \infty$ as $x \to -\infty, y \to -\infty$	$x \in R$	$x \in R$	+	-2
ii)	2	-3.5 and 1.5	5	as $x \to \infty, y \to -\infty$ as $x \to -\infty, y \to -\infty$	$x \in R$	$y \leq 5$	−	5
iii)	0	none	4	as $x \to \infty, y \to 4$ as $x \to -\infty, y = 4$	$x \in R$	$y = 4$	+	4
iv)	1	-2	2	as $x \to \infty, y \to \infty$ as $x \to -\infty, y \to -\infty$	$y \in R$	$y \in R$	+	2



3.

		y-int	end behaviour	domain	range
U	$y = x^2 - 3x - 2$	-2	as $x \to \infty, y \to \infty$ as $x \to -\infty, y \to \infty$	$x \in R$	$y \geq -2$
\	$y = -\frac{1}{2}x + 5$	5	as $x \to \infty, y \to -\infty$ as $x \to -\infty, y \to \infty$	$x \in R$	$y \in R$
⌇	$y = -x^3 + 10x + 6$	6	as $x \to \infty, y \to -\infty$ as $x \to -\infty, y \to \infty$	$x \in R$	$y \in R$
⌇	$y = (4x+2)(x-3)(x+10)$ $(2)\ (-3)\ (10)$ -60	-60	as $x \to \infty, y \to \infty$ as $x \to -\infty, y \to -\infty$	$x \in R$	$y \in R$



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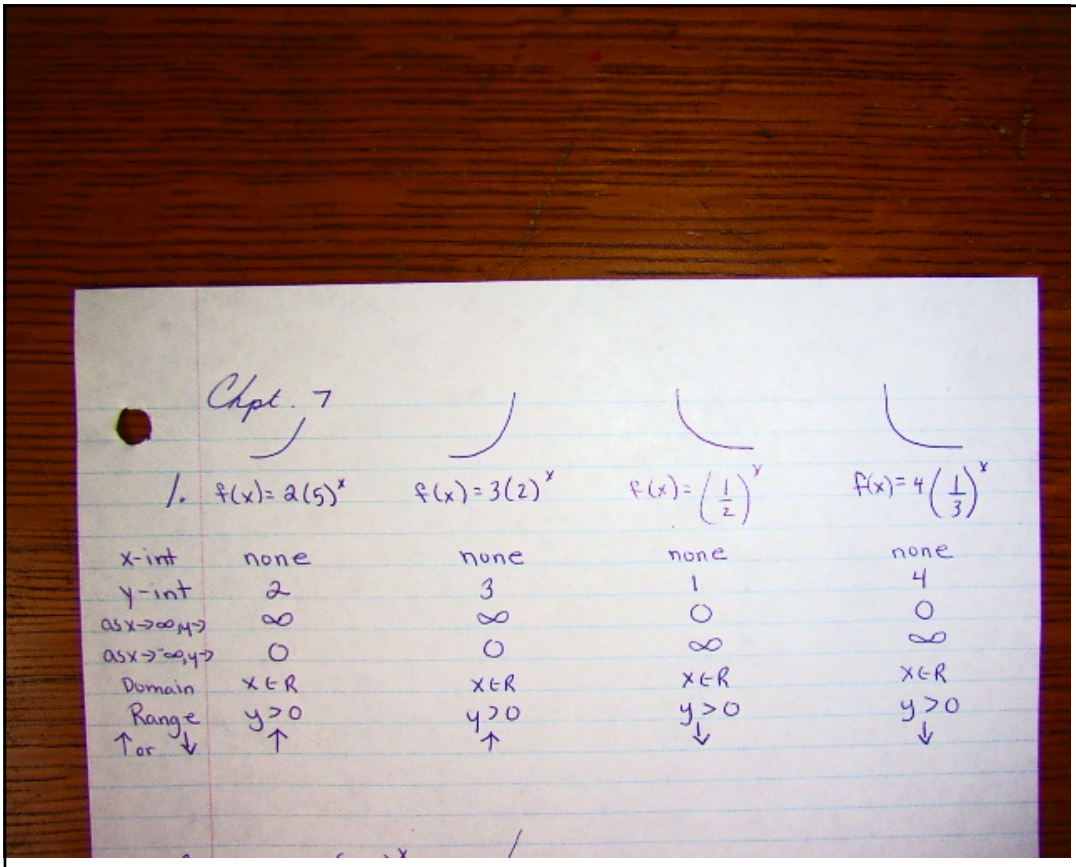
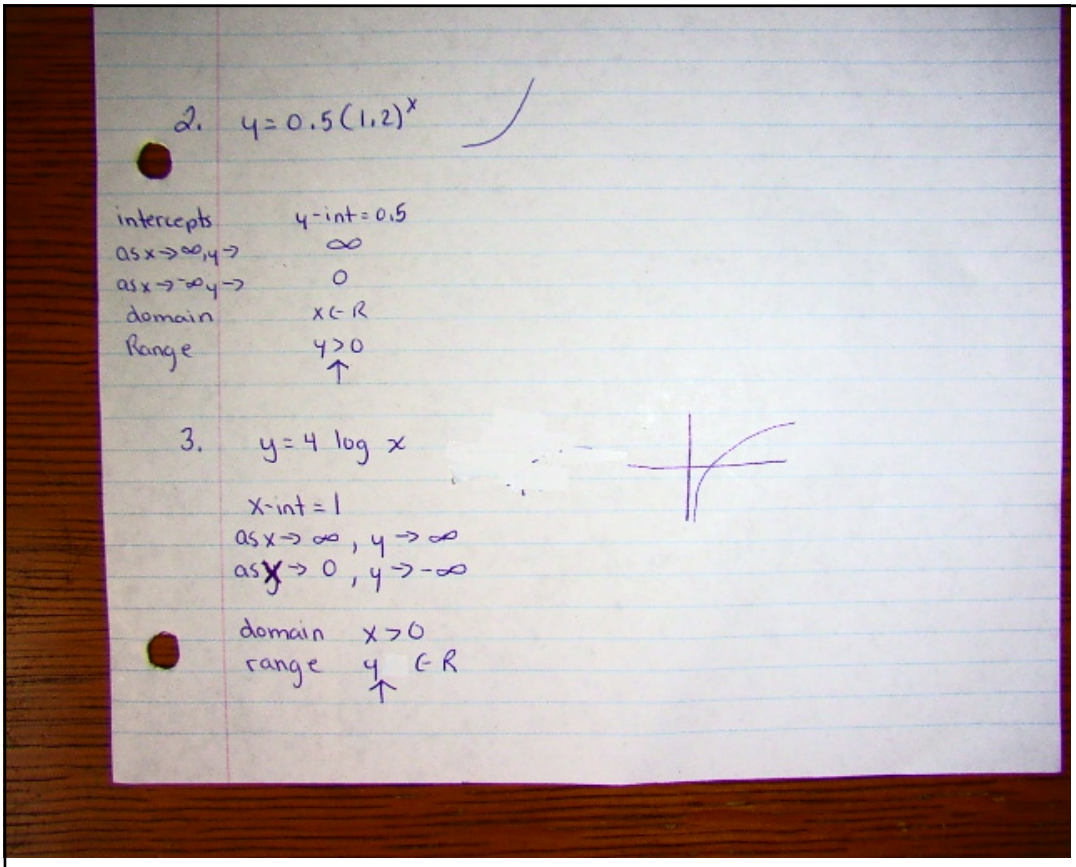
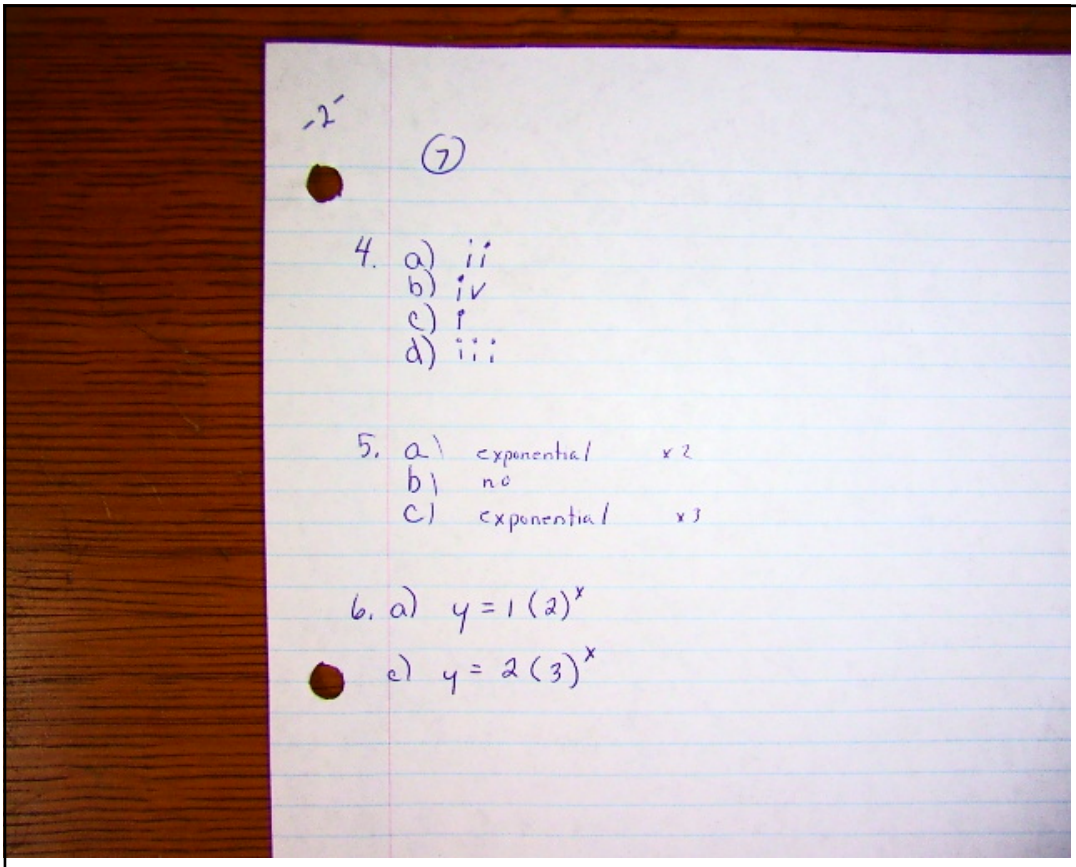
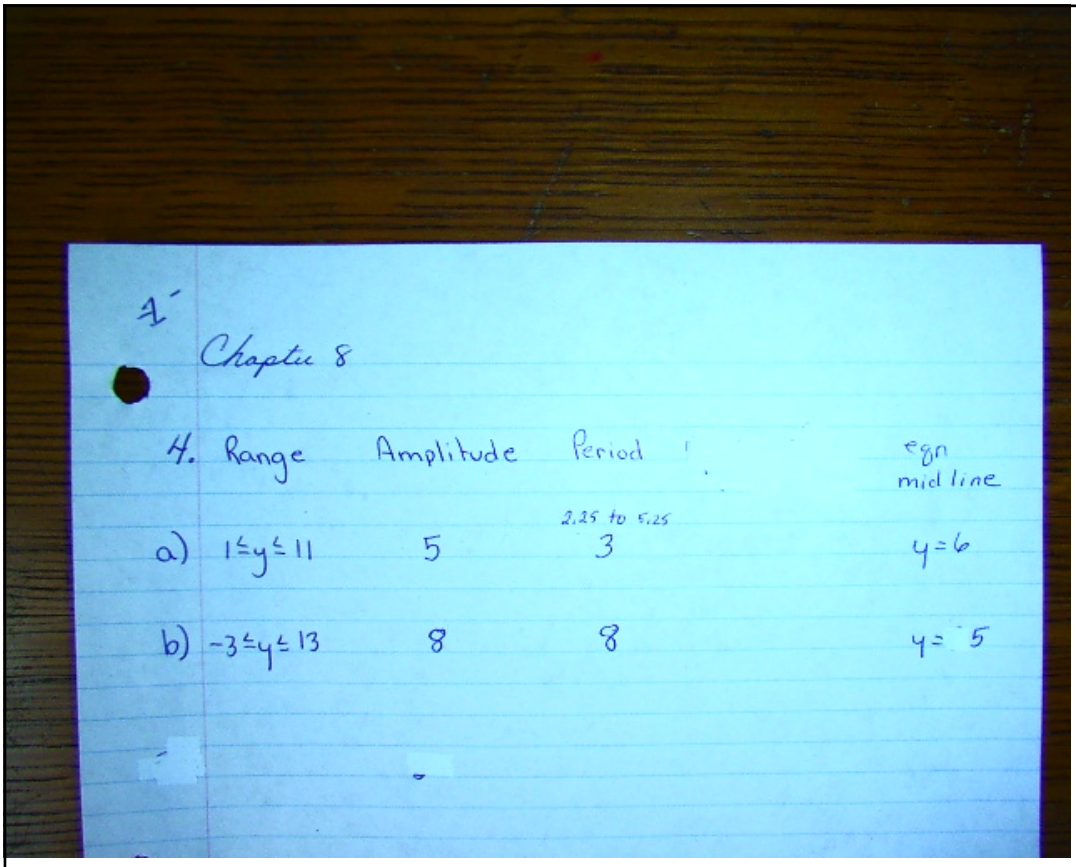

Chpt. 7
1. $f(x)=2(5)^x$
$f(x)=3(2)^x$
$f(x)=\left(\frac{1}{2}\right)^x$
$f(x)=4\left(\frac{1}{3}\right)^x$
x-int none none none none
y-int 2 3 1 4
as $x\to\infty$, y→ ∞ ∞ 0 0
as $x\to-\infty$, y→ 0 0 ∞ ∞
Domain $x\in R$ $x\in R$ $x\in R$ $x\in R$
Range $y>0$ $y>0$ $y>0$ $y>0$
↑ or ↓ ↑ ↑ ↓ ↓


2. $y = 0.5(1.2)^x$
intercepts
y-int = 0.5
as $x \to \infty, y \to$ ∞
as $x \to -\infty y \to$ 0
domain $x \in R$
Range $y > 0$
3. $y = 4 \log x$
x-int = 1
as $x \to \infty$, $y \to \infty$
as $x \to 0$, $y \to -\infty$
domain $x > 0$
range $y \in R$


-2
7
4. a) ii
b) iv
c) i
d) iii
5. a) exponential x 2
b) no
c) exponential x 3
6. a) $y = 1(2)^x$
c) $y = 2(3)^x$



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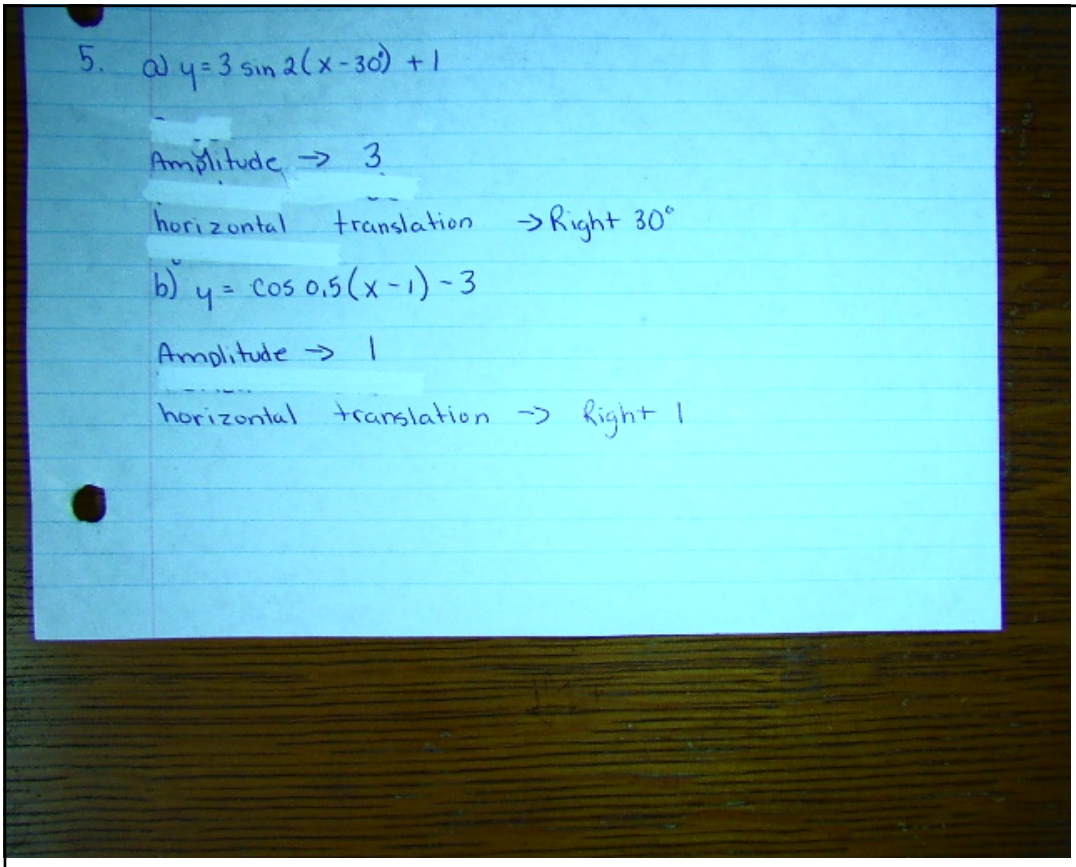
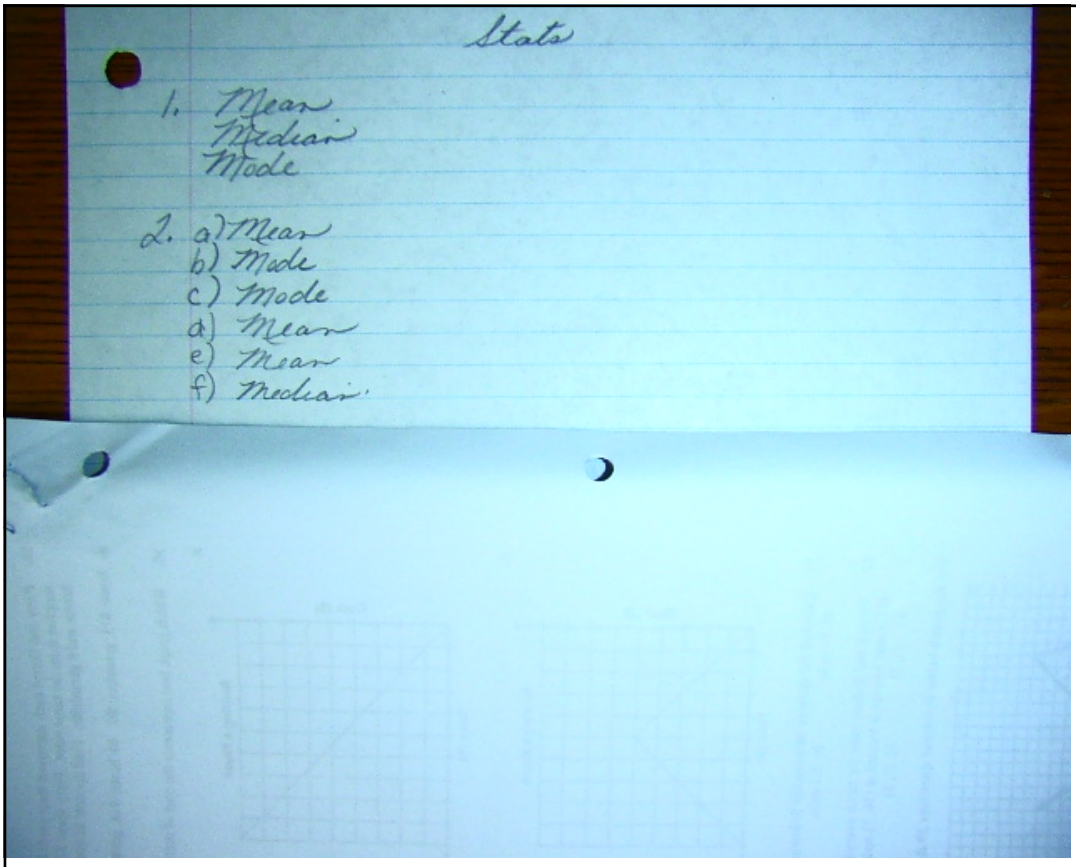

5. a) $y = 3 \sin 2(x - 30) + 1$
Amplitude → 3
horizontal translation → Right 30°
b) $y = \cos 0.5(x - 1) - 3$
Amplitude → 1
horizontal translation → Right 1



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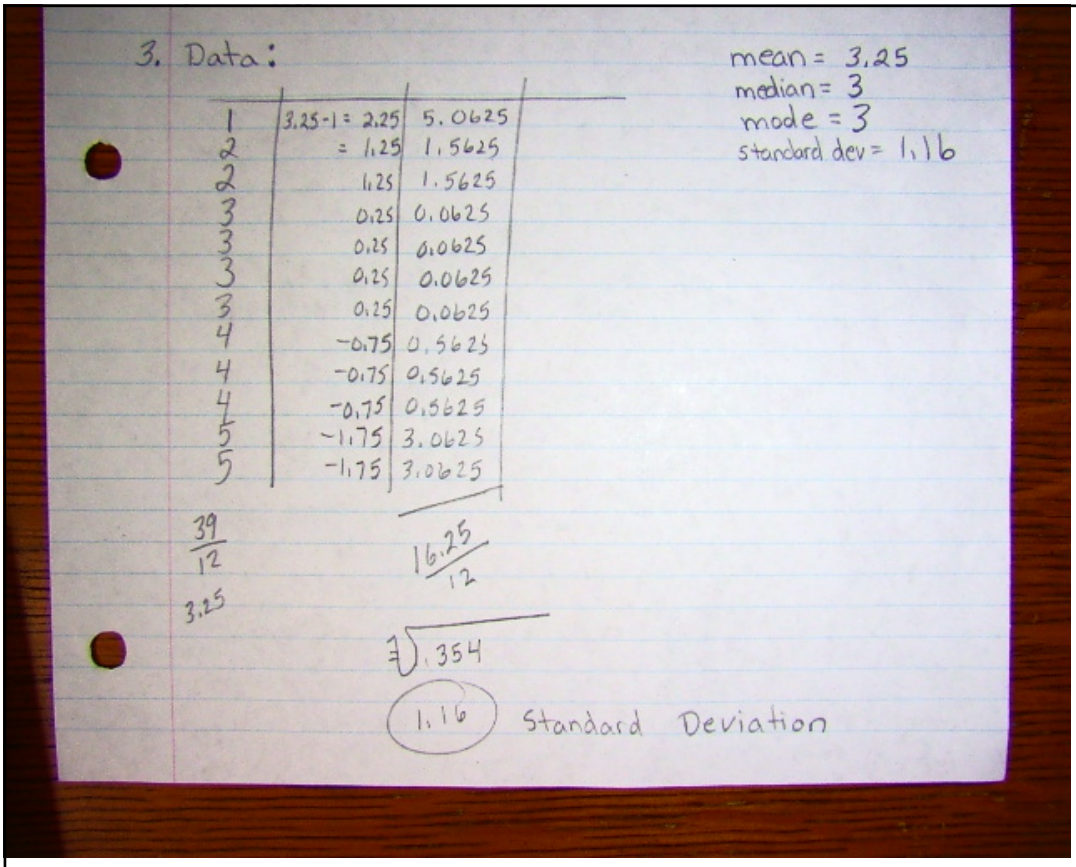
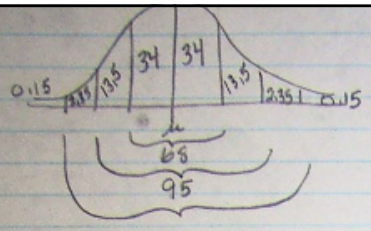
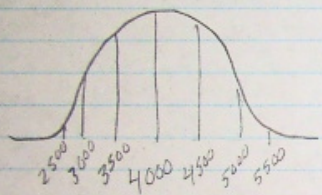

3. Data:
mean = 3.25
median = 3
mode = 3
standard dev = 1.16
1 | 3.25-1 = 2.25 | 5.0625
2 | = 1.25 | 1.5625
2 | 1.25 | 1.5625
3 | 0.25 | 0.0625
3 | 0.25 | 0.0625
3 | 0.25 | 0.0625
3 | 0.25 | 0.0625
4 | -0.75 | 0.5625
4 | -0.75 | 0.5625
4 | -0.75 | 0.5625
5 | -1.75 | 3.0625
5 | -1.75 | 3.0625
39/12
3.25
16.25/12
12) 1.354
1.16 Standard Deviation

4.



5.

a)



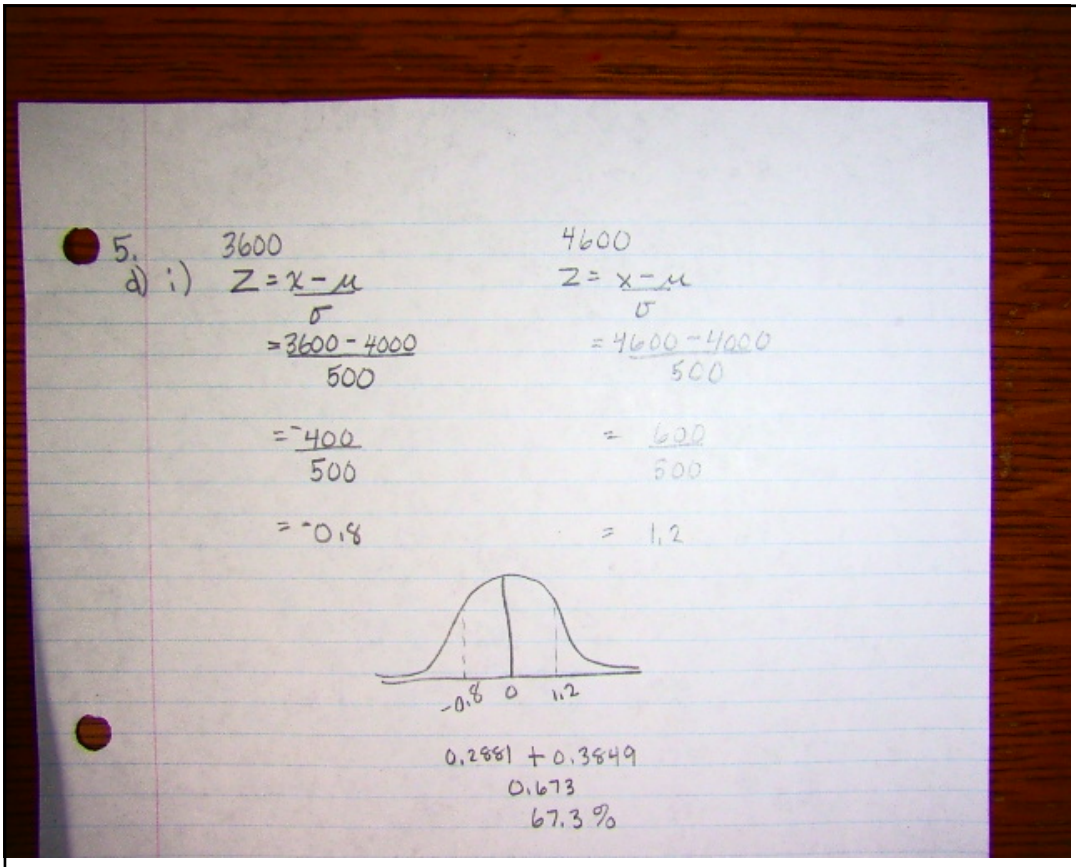
b) i) 34 %

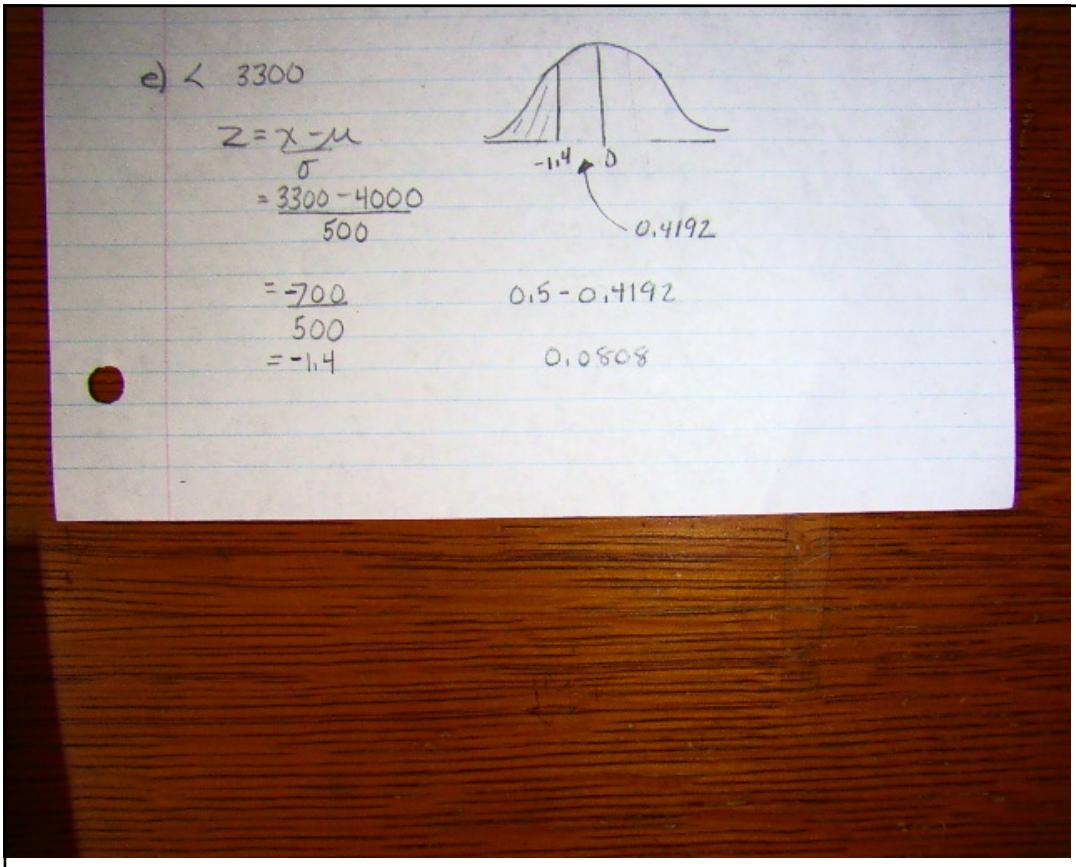
ii) 34 + 13,5 = 47,5 %

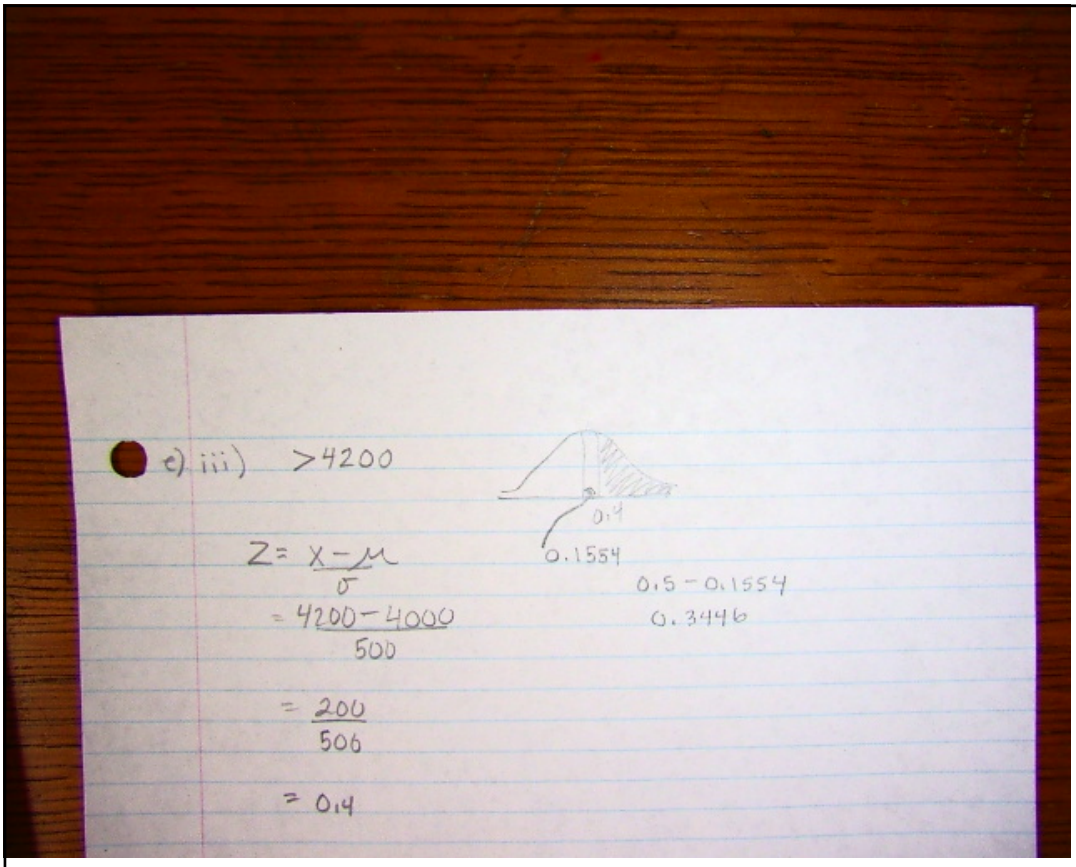
iii) 2,35 + 13,5 + 34 + 34 = 83,85 %

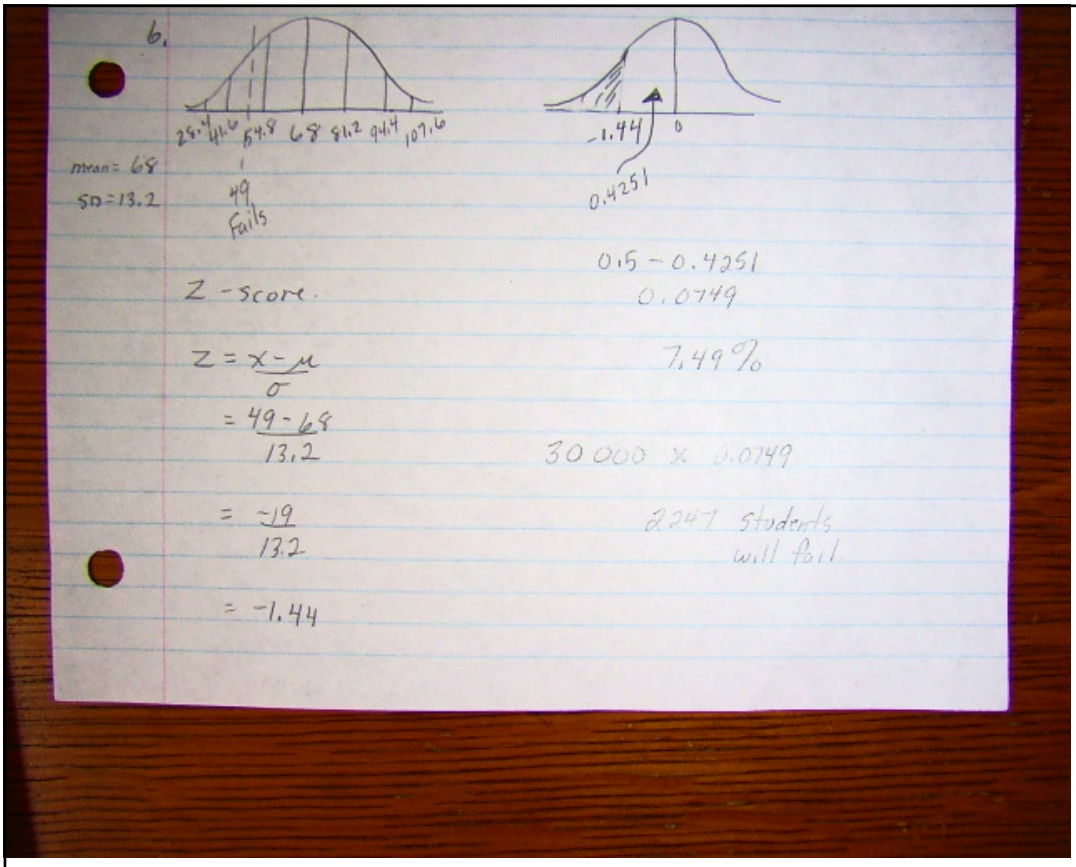
c) i) 68% 3500 - 4500

ii) 95% 3000 - 5000


5.
d) i)
3600
$Z = \frac{x - \mu}{\sigma}$
$= \frac{3600 - 4000}{500}$
$= \frac{-400}{500}$
$= -0.8$
4600
$Z = \frac{x - \mu}{\sigma}$
$= \frac{4600 - 4000}{500}$
$= \frac{600}{500}$
$= 1.2$
-0.8 0 1.2
0.2881 + 0.3849
0.673
67.3 %

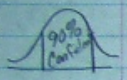

e) < 3300
Z = x − μ / σ
= 3300 − 4000 / 500
= −700 / 500
= −1.4
−1.4
0
0.4192
0.5 − 0.4192
0.0808


e) iii) >4200
Z = X − μ / σ
= 4200 − 4000 / 500
= 200 / 500
= 0.4
0.4
0.1554
0.5 − 0.1554
0.3446


6.
25.4 41.6 54.8 68 81.2 94.4 107.6
mean = 68
SD = 13.2
49
Fails
Z - score.
Z = x - μ / σ
= 49 - 68 / 13.2
= -19 / 13.2
= -1.44
-1.44 0
0.4251
0.5 - 0.4251
0.0749
7.49%
30 000 x 0.0749
2247 students will fail

7. 95% confidence interval for μ if $\sigma = 6$
mean = 72
$n = 49$

$$\bar{x} \pm Z \frac{\sigma}{\sqrt{n}}$$



$$72 \pm 1.96\left(\frac{6}{\sqrt{49}}\right)$$

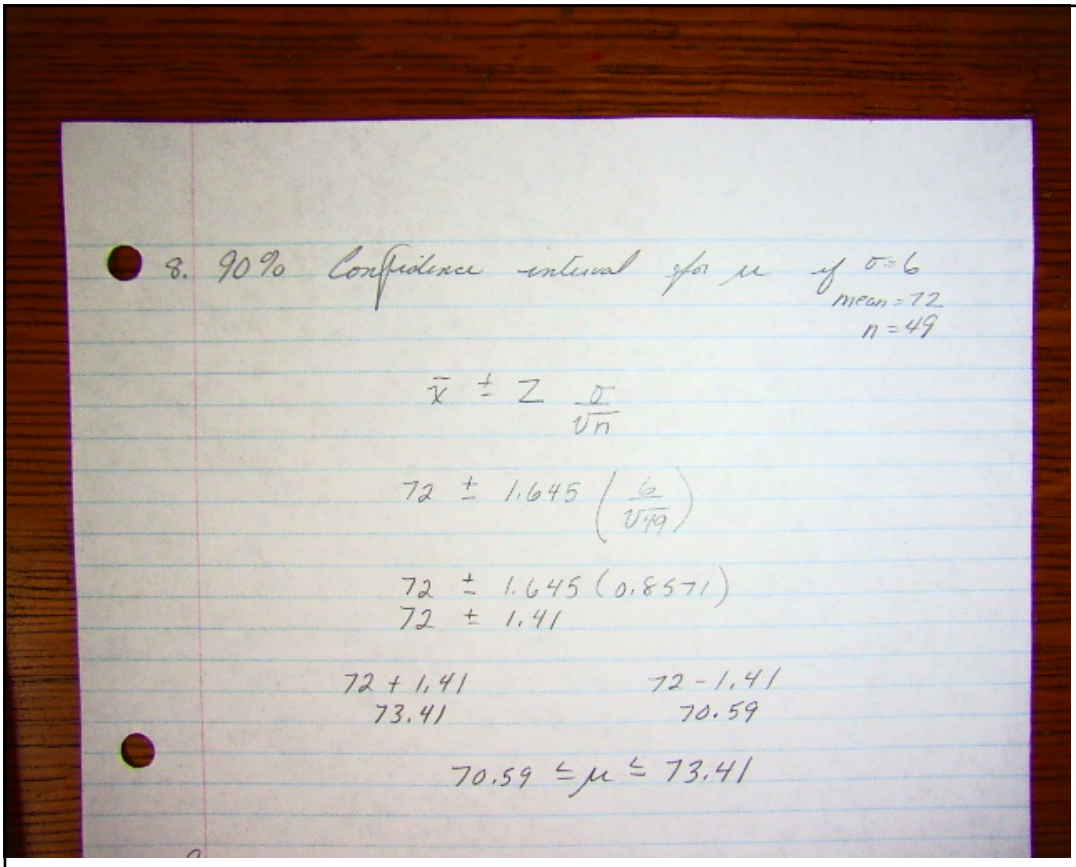
90% = 1.645
95% = 1.96
99% = 2.56

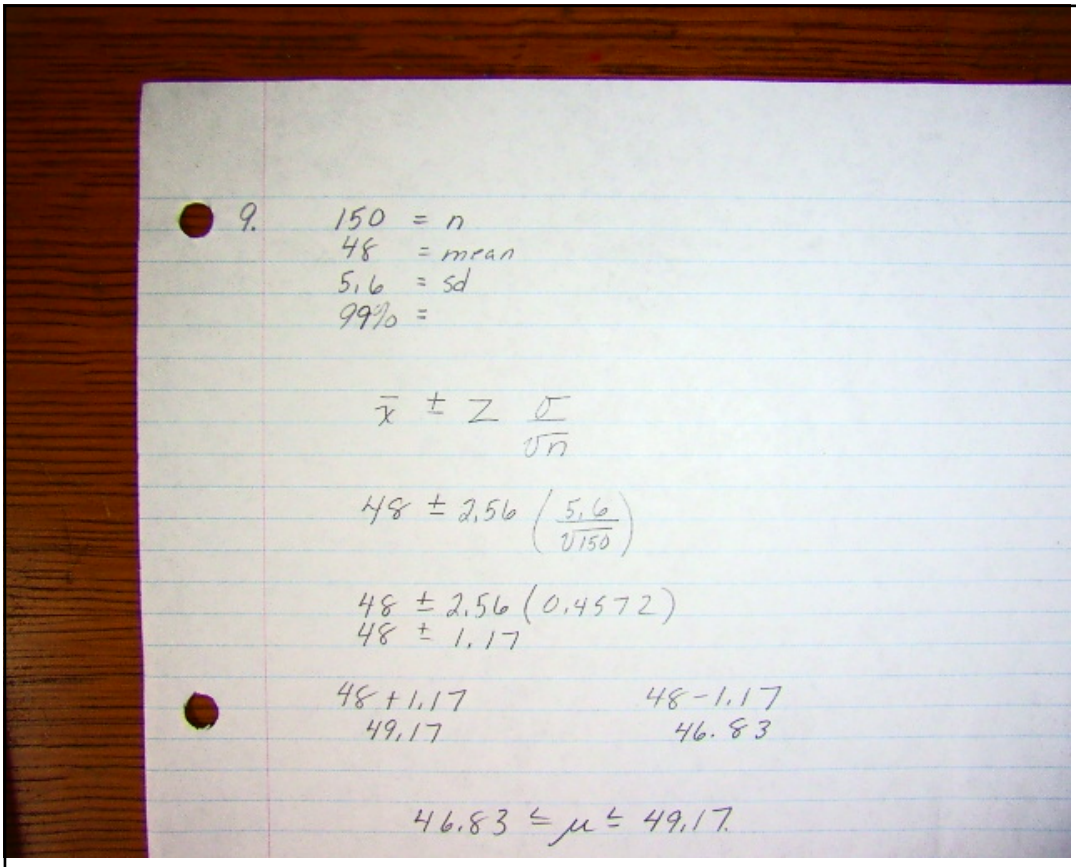
$$72 \pm 1.96(0.8571)$$

$$72 \pm 1.68$$

$72 + 1.68$ $\quad$ $72 - 1.68$
73.68 $\quad$ 70.32

$$70.32 \leq \mu \leq 73.68$$


8. 90% Confidence interval for μ if σ=6
mean = 72
n = 49
$\bar{x} \pm Z \frac{\sigma}{\sqrt{n}}$
$72 \pm 1.645 \left(\frac{6}{\sqrt{49}}\right)$
$72 \pm 1.645 (0.8571)$
72 ± 1.41
72 + 1.41
73.41
72 - 1.41
70.59
$70.59 \leq \mu \leq 73.41$



9. 150 = n
48 = mean
5.6 = sd
99% =

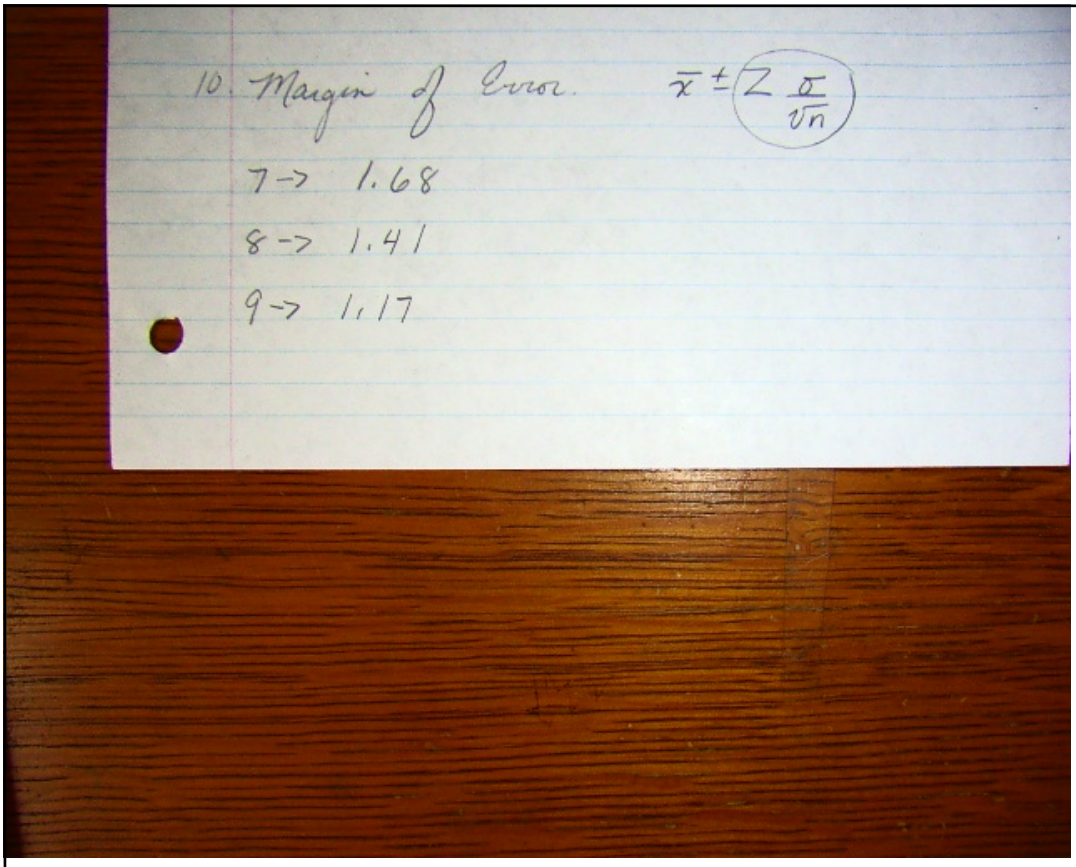
$\bar{x} \pm Z \frac{\sigma}{\sqrt{n}}$

$48 \pm 2.56 \left(\frac{5.6}{\sqrt{150}}\right)$

$48 \pm 2.56 (0.4572)$
48 ± 1.17

48 + 1.17 = 49.17
48 − 1.17 = 46.83

$46.83 \leq \mu \leq 49.17$



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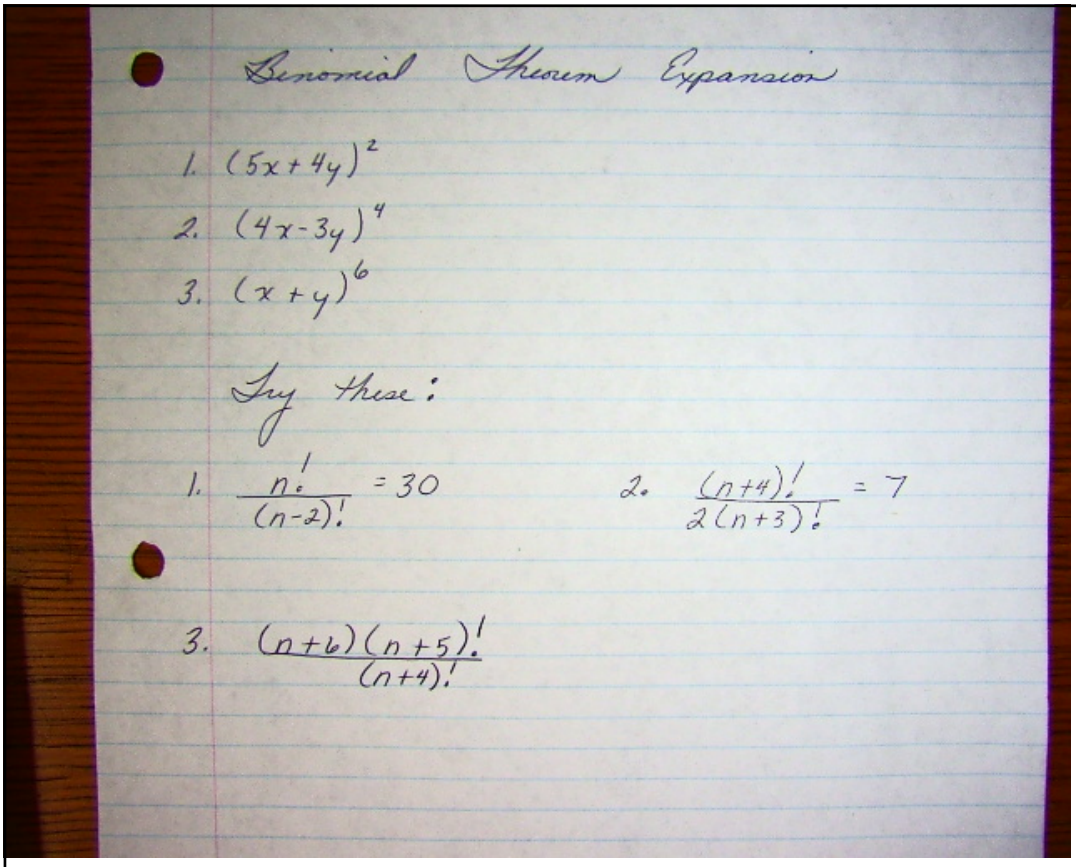


Binomial Theorem Expansion

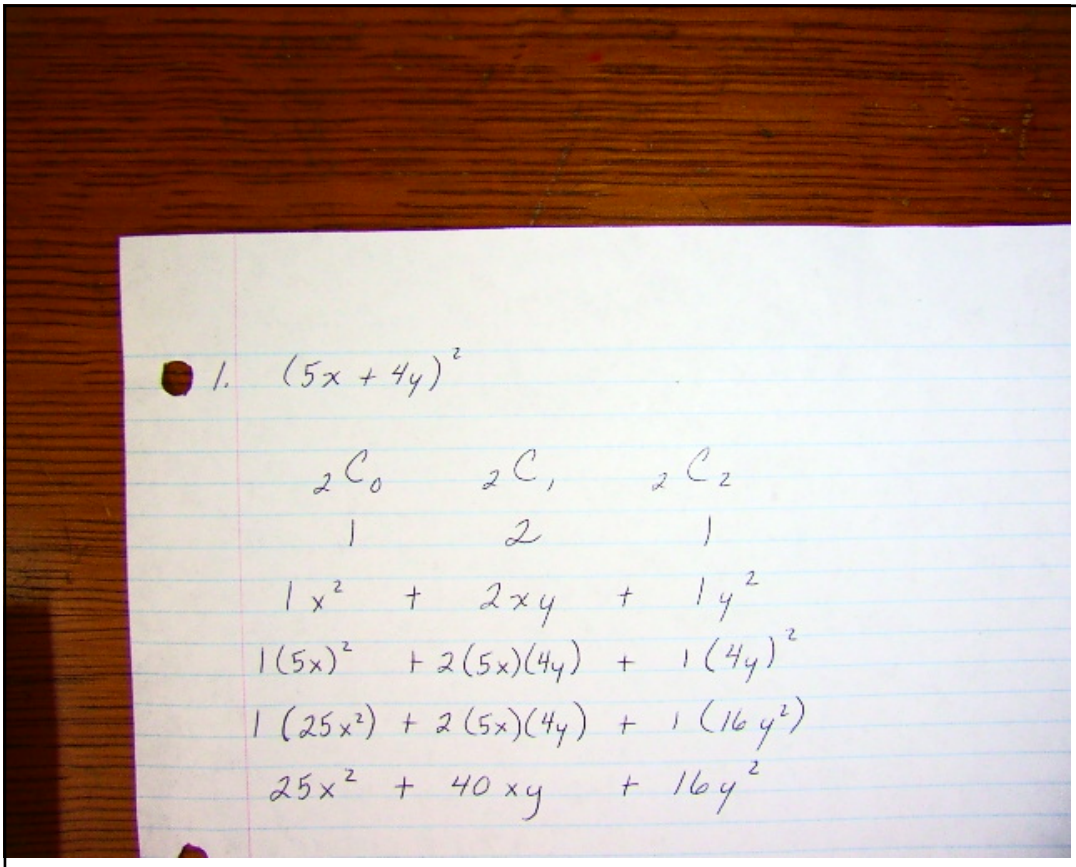
1. $(5x+4y)^2$
2. $(4x-3y)^4$
3. $(x+y)^6$

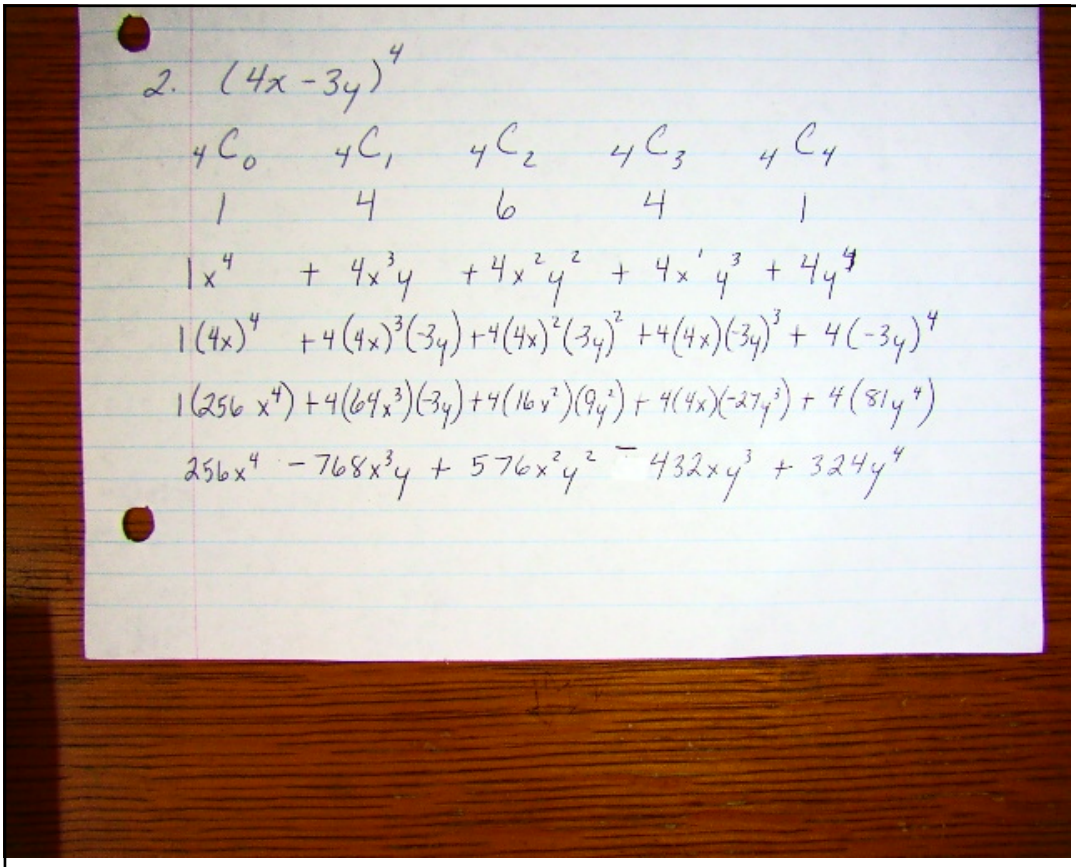
Try these:

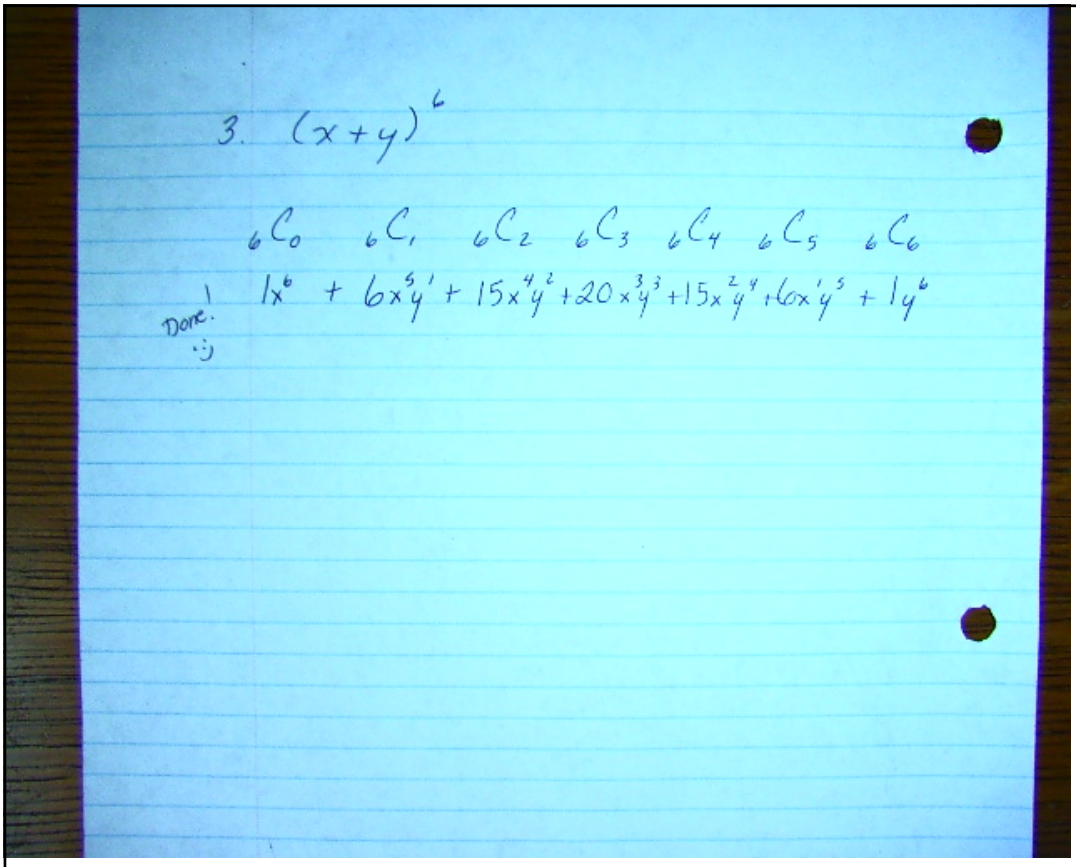
1. $\frac{n!}{(n-2)!} = 30$

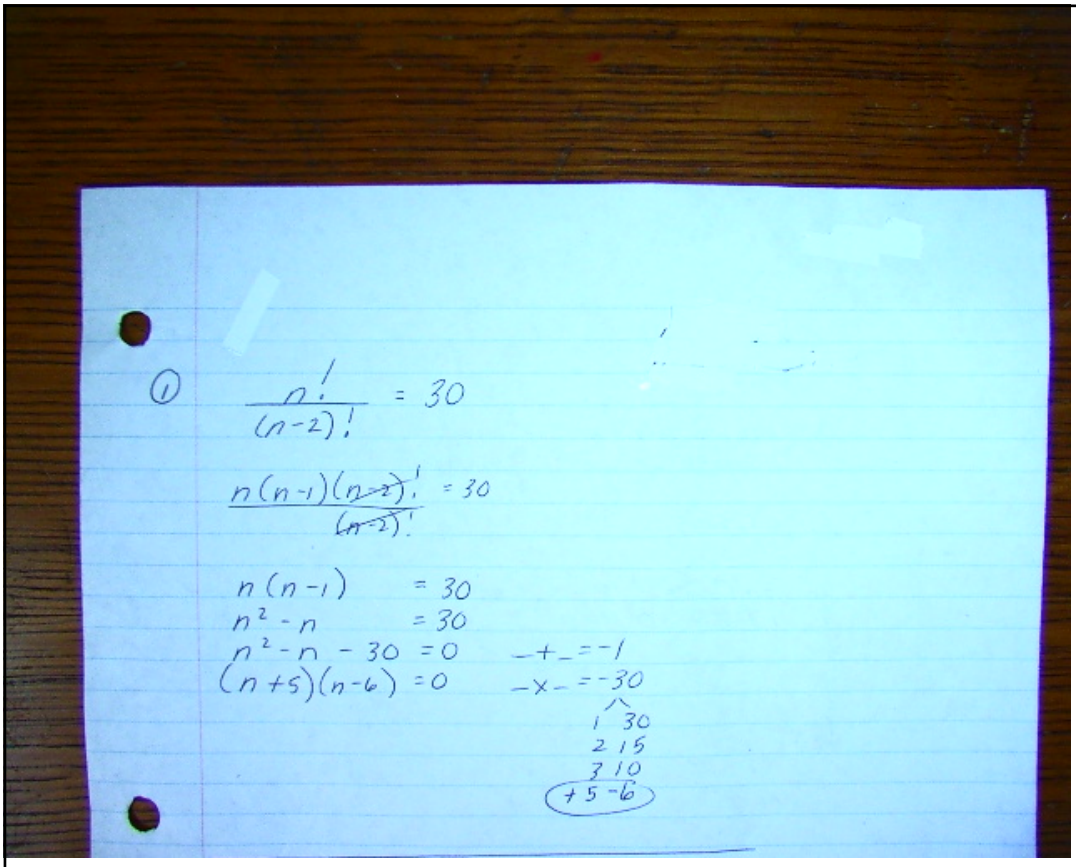
2. $\frac{(n+4)!}{2(n+3)!} = 7$

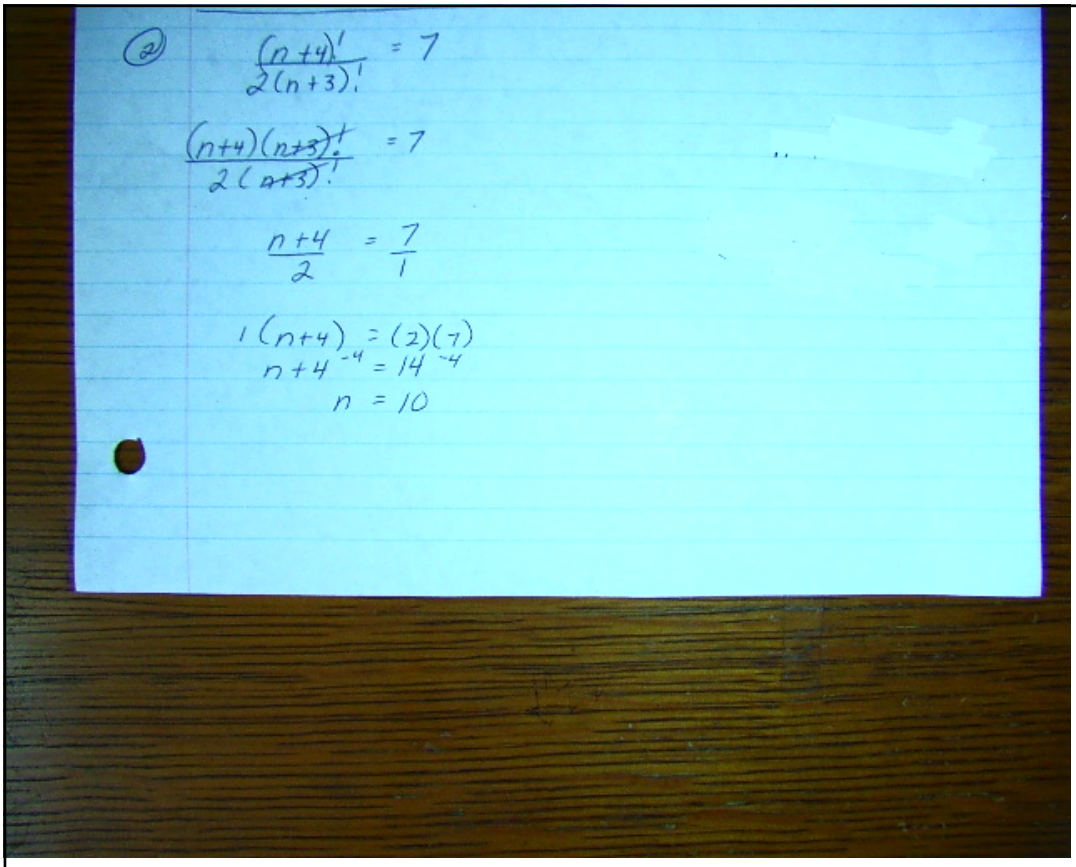
3. $\frac{(n+6)(n+5)!}{(n+4)!}$


1. $(5x + 4y)^2$
$_2C_0$ $_2C_1$ $_2C_2$
1 2 1
$1x^2 + 2xy + 1y^2$
$1(5x)^2 + 2(5x)(4y) + 1(4y)^2$
$1(25x^2) + 2(5x)(4y) + 1(16y^2)$
$25x^2 + 40xy + 16y^2$


2. $(4x-3y)^4$
$_4C_0$ $_4C_1$ $_4C_2$ $_4C_3$ $_4C_4$
1 4 6 4 1
$1x^4 + 4x^3y + 4x^2y^2 + 4x^1y^3 + 4y^4$
$1(4x)^4 + 4(4x)^3(-3y) + 4(4x)^2(-3y)^2 + 4(4x)(-3y)^3 + 4(-3y)^4$
$1(256x^4) + 4(64x^3)(-3y) + 4(16x^2)(9y^2) + 4(4x)(-27y^3) + 4(81y^4)$
$256x^4 - 768x^3y + 576x^2y^2 - 432xy^3 + 324y^4$


3. $(x+y)^6$
${}_6C_0$ ${}_6C_1$ ${}_6C_2$ ${}_6C_3$ ${}_6C_4$ ${}_6C_5$ ${}_6C_6$
$1x^6 + 6x^5y^1 + 15x^4y^2 + 20x^3y^3 + 15x^2y^4 + 6x^1y^5 + 1y^6$
Done. :)


① $\frac{n!}{(n-2)!} = 30$
$\frac{n(n-1)(n-2)!}{(n-2)!} = 30$
$n(n-1) = 30$
$n^2 - n = 30$
$n^2 - n - 30 = 0$
$(n+5)(n-6) = 0$
$-+- = -1$
$-\times- = -30$
1 30
2 15
3 10
+5 -6



② $\frac{(n+4)!}{2(n+3)!} = 7$

$\frac{(n+4)(n+3)!}{2(n+3)!} = 7$

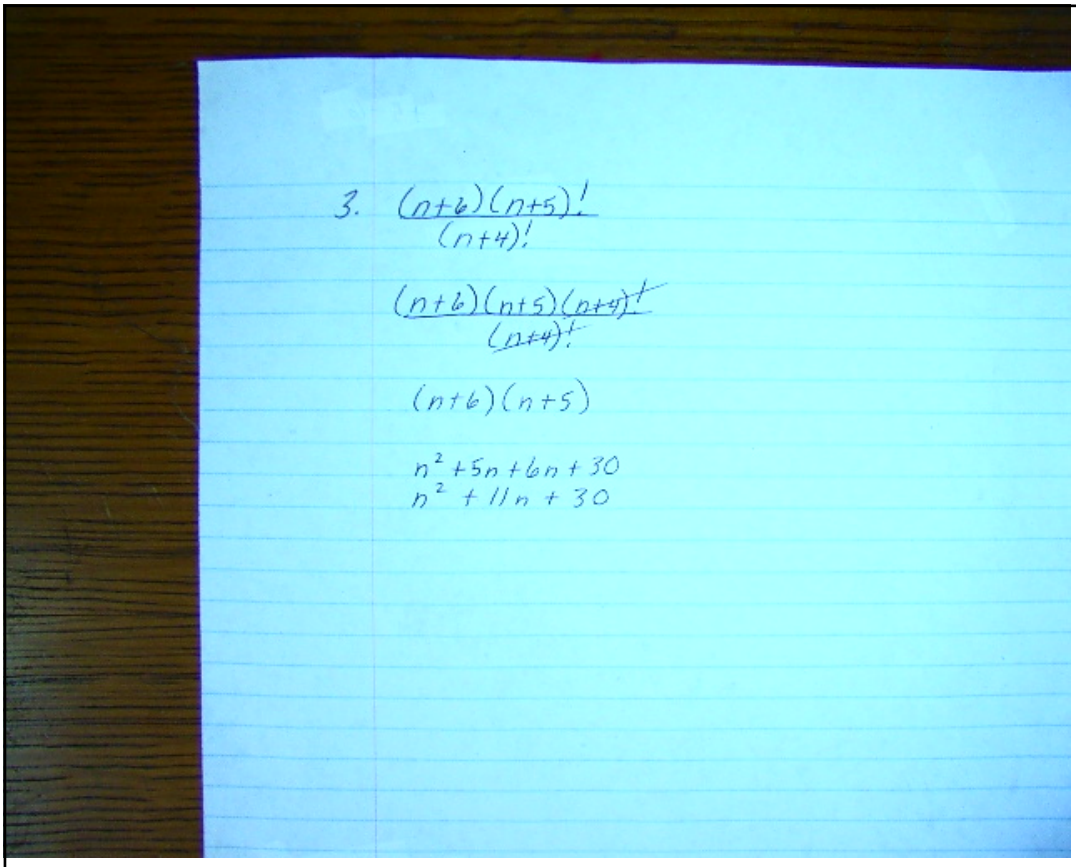
$\frac{n+4}{2} = \frac{7}{1}$

$1(n+4) = (2)(7)$

$n+4 = 14$

$-4 \quad -4$

$n = 10$



3. $\frac{(n+6)(n+5)!}{(n+4)!}$

$\frac{(n+6)(n+5)\cancel{(n+4)!}}{\cancel{(n+4)!}}$

$(n+6)(n+5)$

$n^2+5n+6n+30$

$n^2+11n+30$