Name:

Test # 2

1. $f(x)=x^2-2x-15$ (2)

$0=(x-5)(x+3)=0$

$+5 \quad +5 \quad -3 \quad -3$

$x=5 \qquad x=-3$

$x=\{-3,5\}$

2. subtracted from (1)

$6x^3-x^2+4x+8-1(2x^3+x-5)$

$6x^3-x^2+4x+8-2x^3-x+5$

$4x^3-x^2+3x+13$

3. $x+y=5$ (2)

$3x+2y=10$

if $x+y=5$ is multiplied by -3 $\quad -3x-3y=-15$

4. exponential functions have common ratios

the amount of $ that gets 4% interest per year (3)

5.

x	f(x)	
1	100	·1/2
2	50	·1/2
3	25	·1/2
4	12.5	·1/2
5	6.125	·1
		2

0 | 200 ·2

$y=a(b)^x$

$y=200\left(\frac{1}{2}\right)^x$

b- (4)

6. 15, 15, 25, 35, 35, 50, 55, 55, 55,

median (middle #)

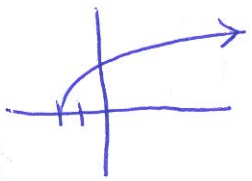
55 (2)

7. $\text{Area}_\Delta=\frac{b\cdot h}{2}$

$\frac{2A}{b}=\frac{b\cdot h}{b}$

$h=\frac{2A}{b}$ (1)

8. *substitute in calc*



(2)

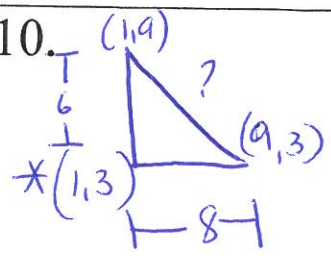
9. x: minutes

↑

domain

can't have negative minutes (3)

10.



$leg^2+leg^2=hyp^2$

$(6)^2+(8)^2=x^2$

$36+64=x^2$

$x^2=100$ (3)

$x=10$

11. $\frac{67}{265}$ (girls attending 4yr college) / total

$= .245$

25% (4)

16. Quadratics are ↑↓ parabolas and have a common 2nd difference

x	y		
-3	8	-5	-2
-2	3	-3	-2
-1	0	-1	-2
0	-1	+1	-2
1	0		

(3)

12. It's a causal relationship the independent variable causes the dependent variable to occur. (2)

17. Linear Functions have a common difference (2)

13. $m = -2$ $(-2, 0)$ (x, y)

$y = mx + b$

$0 = -2(-2) + b$

$0 = 4 + b$ $\boxed{b = -4}$

$\boxed{y = -2x - 4}$

$y + 2x = -4$ (1)

18. total charge $\begin{cases} 150, & 0 < h \le 1 \\ 150 + 80(h-1), & h > 1 \end{cases}$

$h = 3$ use $150 + 80(h-1)$

$150 + 80(3-1)$

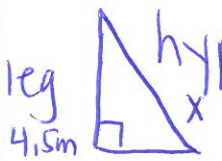
$150 + 80(2)$

$150 + 160$

$310

(3)

14.



leg
9m

$leg^2 + leg^2 = hyp^2$

$(4.5)^2 + (9)^2 = (x)^2$

$20.25 + 81 = x^2$

$\sqrt{x^2} = \sqrt{101.25}$

$x = 10.06 \rightarrow \boxed{10.1m}$ (1)

19. $g(x) = x^2 + 3x$ $(-3, 0)$

$g(-3) = (-3)^2 + 3(-3)$

$g(-3) = 9 - 9$

$g(-3) = 0$ (1)

15. *y-int

x	y
0	-3
-1	-2
-2	-1
-3	0

$y = |x| - 3$

shift down 3 units (3)

20. $h(t) = -16t^2 + 80t + 3$

$h(2) = -16(2)^2 + 80(2) + 3$

$h(2) = -16(4) + 160 + 3$

$h(2) = -64 + 163$

$h(2) = 99$ feet (2)

21. $y = x^2$ (4)

1) $y = \frac{1}{2}x^2$ (vertical shrink)
2) $y = 2x^2$ (vertical stretch)
3) $y = x^2 + 2$ (vertical shift up 2)
4) $y = x^2 - 2$ (vertical shift down 2)

23. 15% interest annually shown monthly (12 mths/yr)

$r = (1.15^{\frac{1}{12}})^{12t}$ (1)

22. Largest dispersion by IQR

1) 15, 17, 19, 21, 21, 22, 28 (Q_1, Q_2, Q_3)
IQR = 22 − 17 = 5

2.) 21, 23, 36, 37, 44, 48, 50
IQR = 48 − 23 = 25

3.) 10, 19, 22, 23, 33, 29, 44
IQR = 29 − 19 = 10

4.) 42, 47, 49, 50, 52, 59, 60
IQR = 59 − 47 = 12 (2)

24. $y \leq \frac{1}{2}x + 5$

$y > 2x - 1$ dotted line
$y \leq \frac{1}{2}x + 5$ solid line
test (0,0)

$y > 2x - 1$: $0 > -1$ ✓
$y \leq \frac{1}{2}x + 5$: $0 \leq 5$ ✓
(−2, 1)
$1 > 2(-2) - 1$
$1 > -5$ ✓
$1 \leq \frac{1}{2}(-2) + 5$
$1 \leq 4$ ✓ (3)

Part II

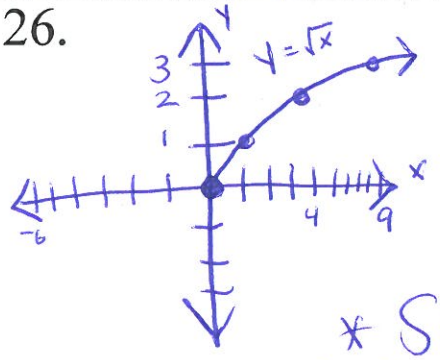
25. $x - 3y = -15$ → slope-intercept form $y = mx + b$

$-x \quad -x$

$\frac{-3y}{-3} = \frac{-x}{-3} - \frac{15}{-3}$

$y = \frac{1}{3}x + 5$

26. $y = \sqrt{x}$



Range: $y \geq 0$

* Square root functions will always have ranges greater than or equal to zero

27. $6x^2-4x-2$

GCF = 2

$2(3x^2-2x-1)$

eyeglass since $a>1$

x^2-2x-3

$(x-3)(x+1)$

$(\frac{3x}{3}-\frac{3}{3})(3x+1)$

$\boxed{2(x-1)(3x+1)}$

28.

month	profit
0	520 * starting value
1	1040
2	2080
3	4160

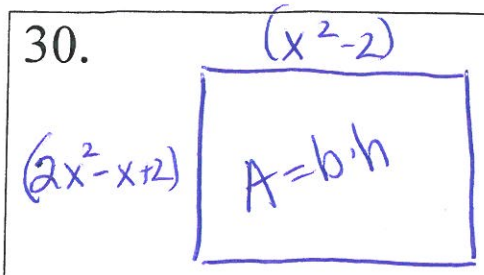
find the sum of the profits

4160
1040
+2080
$7280

The profit is $7280

29. $\frac{3b}{b+2}+\frac{12}{b+2}$ $\frac{3b+12}{b+2}$ $\boxed{\frac{3(b+4)}{b+2}}$

30.



$(x^2-2)(2x^2-x+2)$

	$2x^2$	$-x$	$+2$
x^2	$2x^4$	$-x^3$	$+2x^2$
-2	$-4x^2$	$+2x$	-4

$2x^4 - x^3 - 2x^2 + 2x - 4$ units^2

31.

$h(x) = -2x^2 - x + 2$

$h(-2) = -2(-2)^2 - (-2) + 2$

$h(-2) = -2(4) + 2 + 2$

$h(-2) = -8 + 2 + 2$

$h(-2) = -6 + 2$

$\boxed{h(-2) = -4}$

32.

1st row	6	
2nd row	14	+8
3rd row	22	+8
4th	30	+8
5th	38	+8
6th	46	+8
7th	54	+8

$6+14+22+30+38+46+54 = 210$

* the sum of the rows is 210

210 chairs are set out for wedding guests

Part III

33. Let x = month of the year.

a.) $25+8x < 11+10x$ or $11+10x > 25+8x$

b.) $25+8x < 11+10x$

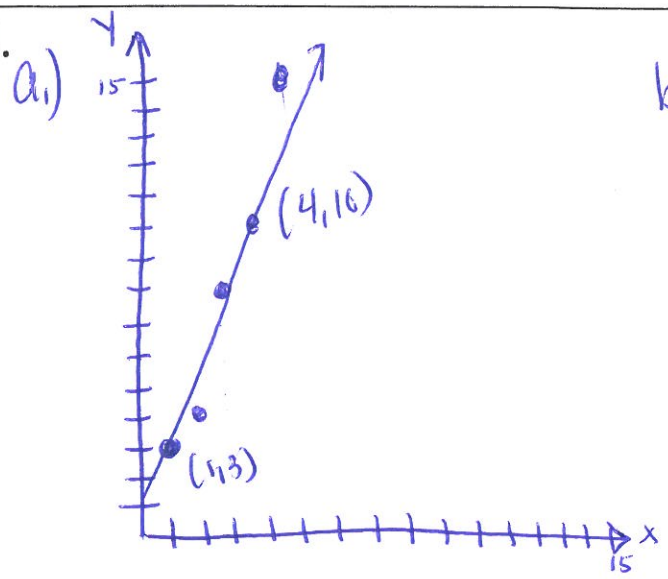
$-11 \quad -8x \quad -11 \quad -8x$

$\frac{14}{2} < \frac{2x}{2}$

$x > 7$, so in the months of August to december

34.

a.)



b.) $y = mx+b$ (4,10)(1,3)

$m = \frac{10-3}{4-1} = \frac{7}{3}$

$y = \frac{7}{3}x+b$

$3 = \frac{7}{3}(1)+b$

$-3 \quad -3$

$\frac{9}{3} - \frac{7}{3} = b$

$\frac{2}{3} = b$

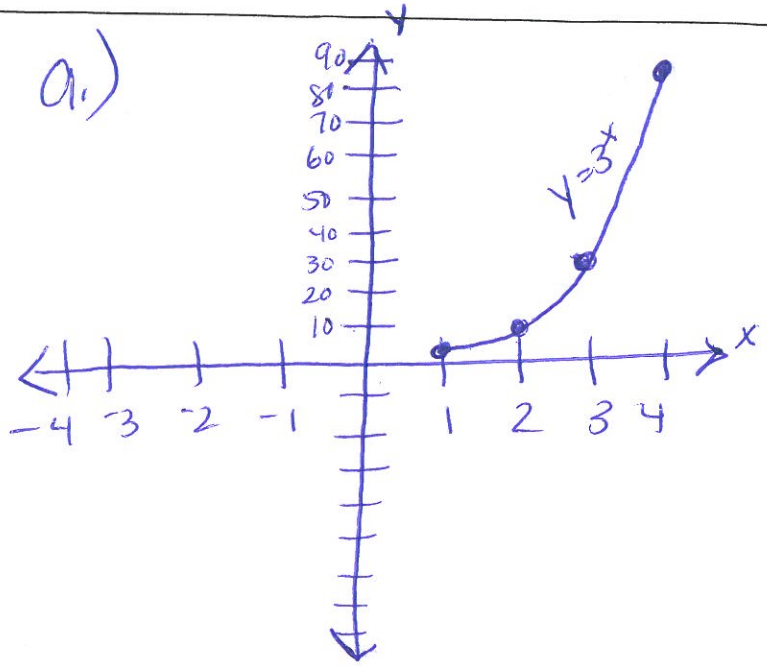
$y = \frac{7}{3}x + \frac{2}{3}$

Part III

35.

x	f(x)
0	1
1	3
2	9
3	27
4	81

a.)



b.) $y = 3^x$

36. Linear Regression in calc. * Make sure Diagnostics are on *

a.) $y = 0.31x - 11.02$

b.) $r = .95$

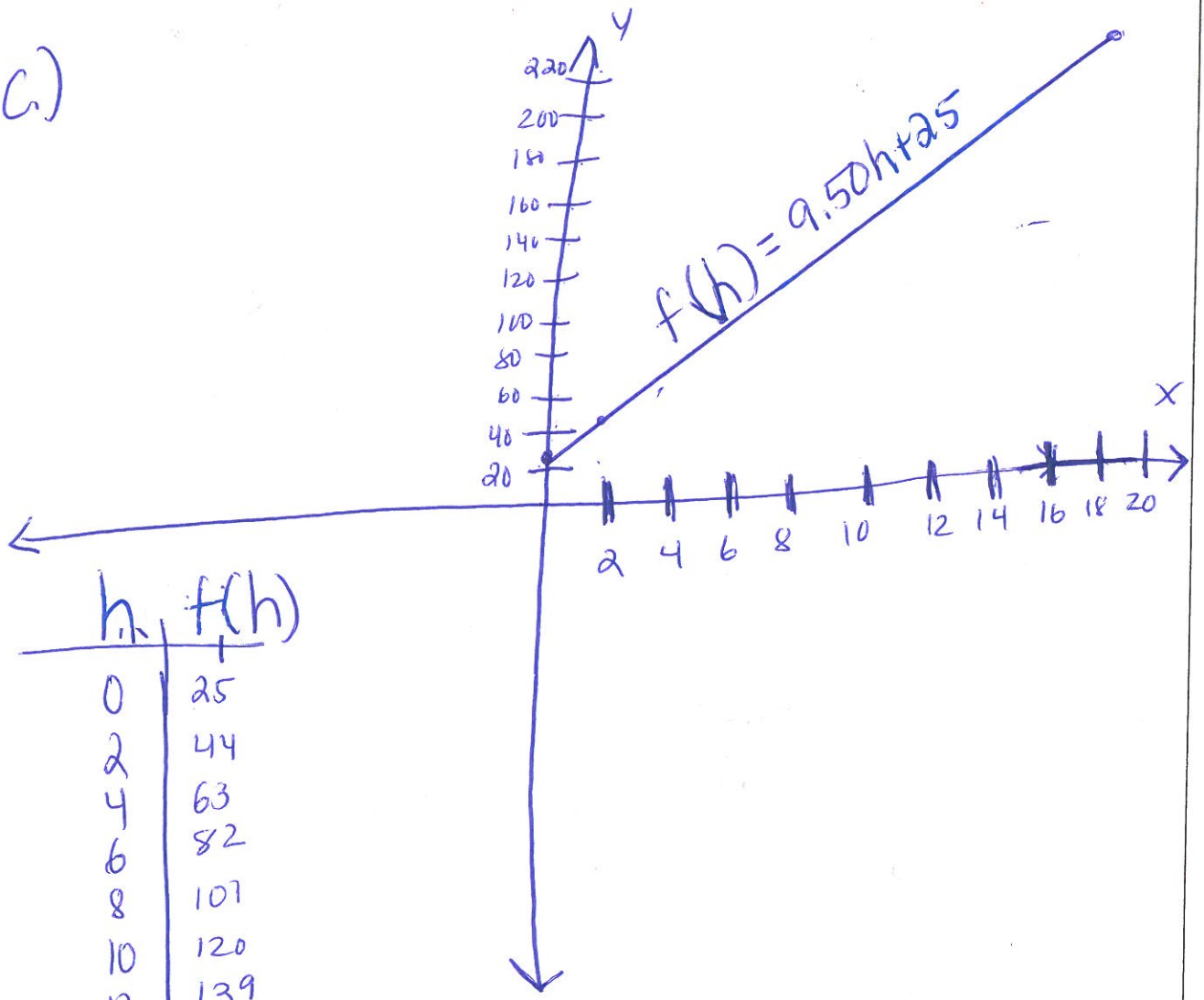
c.) This is a good correlation coefficient b/c it is very close to 1.

Part IV

37. a) $f(h) = 9.50h + 25$

b) $0 \leq h \leq 20$

c)



h	f(h)
0	25
2	44
4	63
6	82
8	101
10	120
12	139
14	158
16	177
18	196
20	215