11-13+3 solutions rest 2

(1) $(1,-2)$

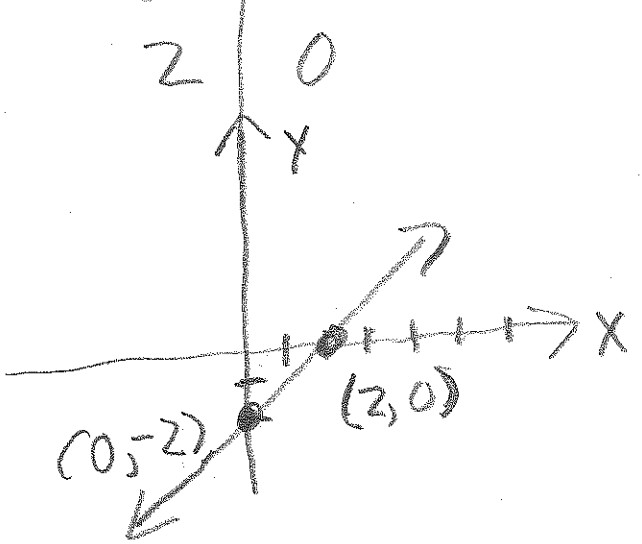
$6y-4x=-16$

$6\cdot(-2)-4\cdot 1=-16$

$-12-4=-16$

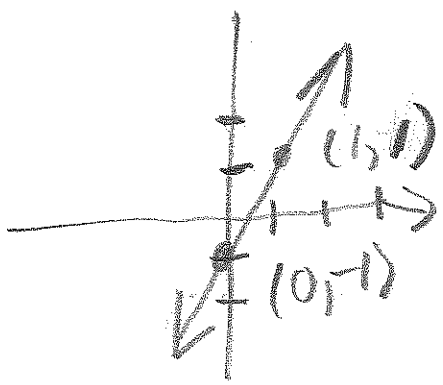
(2)

x	$y=x-2$
0	-2
2	0



(3) $y=2x-1$

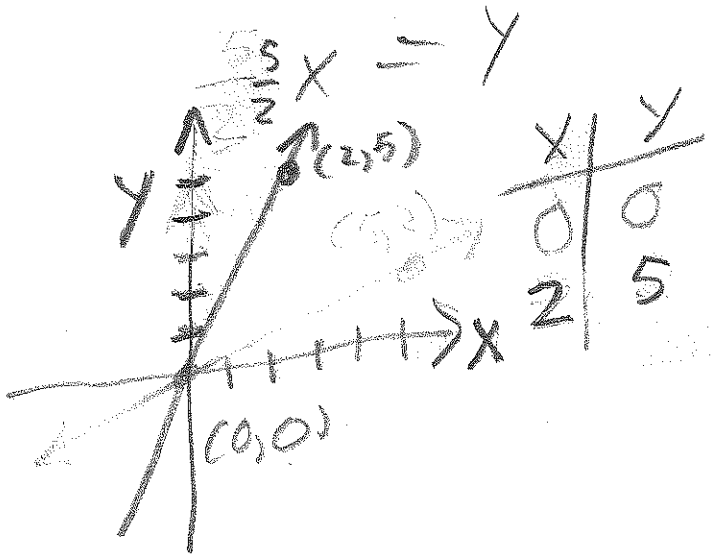
x	y
0	-1
1	1



(4) $5x=2y$

$\frac{5}{2}x=y$

x	y
0	0
2	5



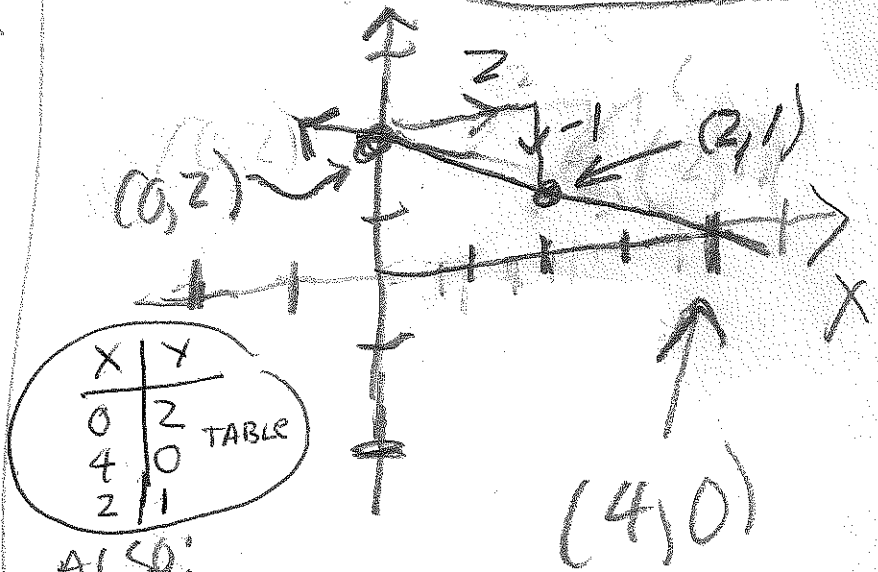
(5) $x+2y=4$

$2y=-x+4$

$y=-\frac{1}{2}x+2$

x	y
0	2
4	0
2	1

TABLE



ALSO:

USE INTERCEPTS

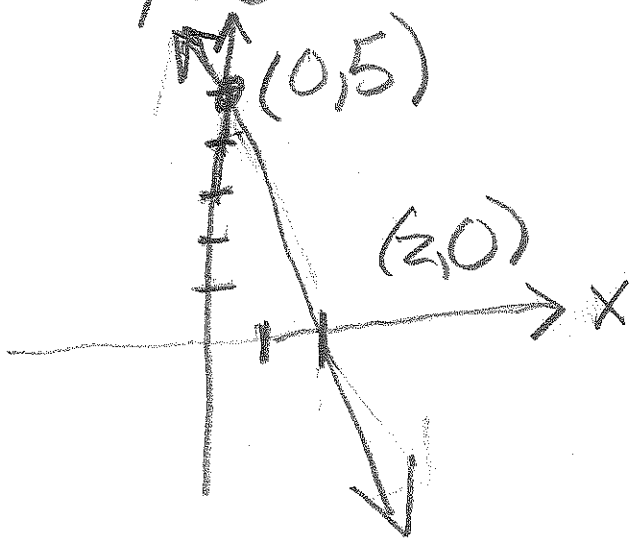
$x=0 \Rightarrow y=2 \Rightarrow (0,2)$

$y=0 \Rightarrow x=4 \Rightarrow (4,0)$

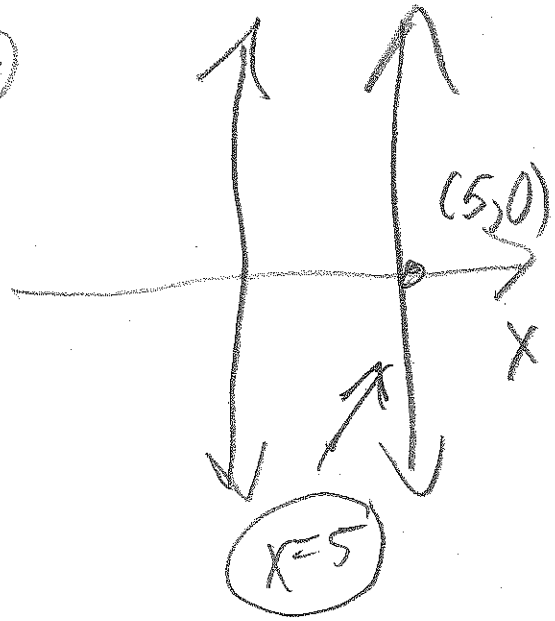
(6) $5x + 2y = 10$

$x = 0 \Rightarrow y = 5$

$y = 0 \Rightarrow x = 2$



(7)



(8) 5h

195
93
288

PM $y = 220$

(a) $\frac{\$220}{5h} = \frac{\$44}{h}$

(b) $\frac{\$220}{103 pg} = \$2.14/pg$

$$\begin{array}{r} 2.135 \\ 103\overline{)220.000} \\ 206\downarrow \\ \hline 140 \\ 103\downarrow \\ \hline 370 \\ 309\downarrow \\ \hline 610 \end{array}$$

(9) SHORTCUT

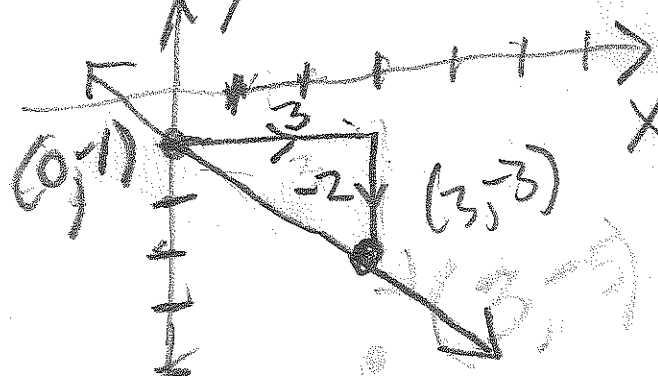
(1,4) (3,0)

$\frac{-4}{-2} \Rightarrow \frac{2}{2} = 1$

(10) $\frac{-28}{540} = \frac{-14}{270} = \frac{7}{270}$

(0,0)

(11)



(12.)

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

$y = mx + b$

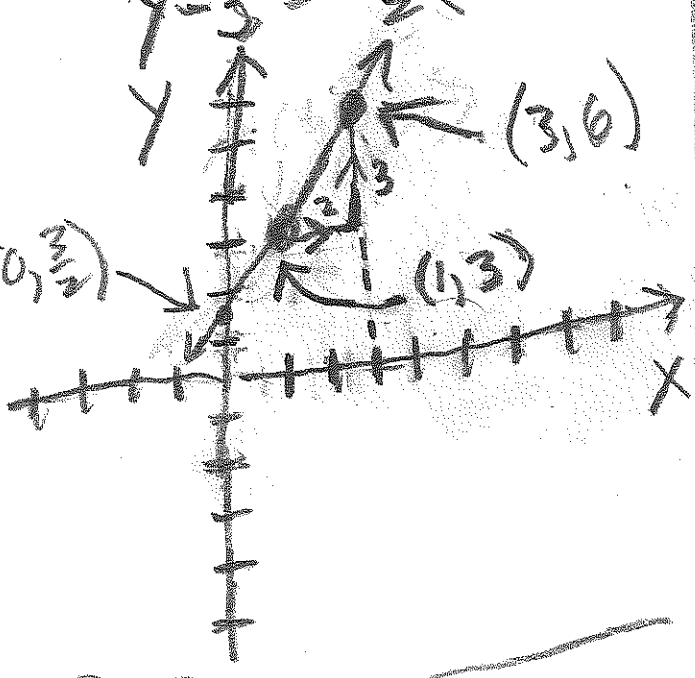
(13.)

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

$y - 5 = 3(x - (-5))$

(14.) $(x_1, y_1) = (1, 3)$

$y - 3 = \frac{3}{2}(x - 1)$



(15.) (T) $5 \cdot 1 - 2 \cdot 4 = -3$

(T) $7 \cdot 1 - 3 \cdot 4 = -5$

yes!

(16.)

$x + y = 5$

$y = x + 1$

$x + x + 1 = 5$

$2x + 1 = 5$

$2x = 4$

$x = 2$

$y = 2 + 1 = 3$

$\Rightarrow (2, 3)$

(17.) $x = y - 6$

$3x + 2y = 2$

$3 \cdot (y - 6) + 2y = 2$

$3y - 18 + 2y = 2$

$5y = 20$

$y = 4$

$x = -2$

$x = 4 - 6 = -2$

$\Rightarrow (-2, 4)$

(18.)

$x - y = 2$
$x + y = 4$ } ADD

$2x = 6$

$x = 3$

ELIMINATE y

$y = 1$

$\Rightarrow (3, 1)$

(19.)

$x - y = 3$ | $\times 2$

$2x - 2y = 0$

$-(2x - 3y = 1)$

$y = 7$

$x - y = 3$

$x - 7 = 3$

$x = 10$

$(10, 7)$

(20.)

$x + y = 200$

$0.50x + 0.80y = 136$ *

* $136 = (0.68)(200)$

$x + y = 200$

$50x + 80y = 13600$

$x = 200 - y$

$50(200 - y) + 80y = 13600$

$10000 - 50y + 80y = 13600$

$+30y = 3600$

$30y = 3600$

$y = 120$

$x = 80$

SOLUTION

(80, 120)

18.
$x - y = 2$
$x + y = 4$

19.
$x - y = 3$
$2x - 3y = -1$

SOLVE USING THE SUBSTITUTION OR ELIMINATION METHOD:

20. JEROME'S EXPERIMENT REQUIRES HIM TO MIX A 50 % ACID SOLUTION WITH AN 80 % ACID SOLUTION TO CREATE 200 -oz OF A 68 % ACID SOLUTION. HOW MUCH 50 % SOLUTION (called x) AND HOW MUCH 80 % ACID SOLUTION (called y) SHOULD HE USE? IN OTHER WORDS, SOLVE FOR x AND y.

SEC. 2.6 AND 2.7

21. FOR EACH PART BELOW, DETERMINE WHETHER EACH NUMBER IS A SOLUTION TO THE INEQUALITY: SUBSTITUTE THE NUMBER INTO THE INEQUALITY. IF THE NUMBER IS A SOLUTION WRITE "YES"; IF NOT WRITE "NO".
$x < 19$ T F F
(a) 18.99 (b) 19.01 (c) 19

22. GRAPH ON A NUMBER LINE: $x < 7$.

23. SOLVE AND GRAPH ON A NUMBER LINE: $x + 4 < -1$

24. SOLVE AND GRAPH ON A NUMBER LINE: $2 + 4x > 18$

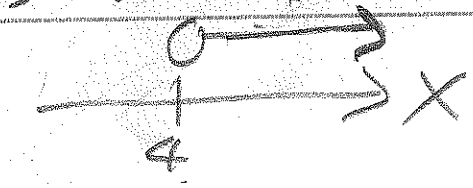
25. RJ'S PLUMBING AND HEATING CHARGES \$55 PLUS \$40 PER HOUR FOR EMERGENCY SERVICE. CHARLOTTE REMEMBERS BEING BILLED *AT LEAST* \$150 FOR AN EMERGENCY CALL. HOW LONG (IN HOURS) WAS RJ'S SERVICE AT HER HOME?

26. EXTRA CREDIT: LESLIE'S FIRST FOUR QUIZ GRADES ARE 73, 75, 89 AND 91. SHE WANT TO EARN AN AVERAGE OF AT LEAST 85 % . WHAT SCORE ON THE 5TH QUIZ WILL HER AVERAGE QUIZ GRADE BE AT LEAST 85?

26. $\frac{73+75+89+91+x}{5} \geq 85$

$\frac{328+x}{5} \geq 85 \Rightarrow 328 + x = 425 \Rightarrow x = 97$

24. $2 + 4x > 18$
$4x > 16$
$x > 4$



25. $\Rightarrow 215 \leq 55 + 40 \cdot t$
$160 \leq 40t$
$4 \leq t$
41

4.7 and

Ex	problem
1 →	1
2 →	7
3 →	9
4 →	17, 29, 19
5 →	35

4.8 and

Ex	problem
1	5, 7
2	27, 29
3	33, 38, 47, 53
4	63
5	77

11-13-13 4.6, 4.7, 4.8 E.C. on Test #3*

GRID 4.6

Ex	Prob
1	9
2	13
3	21
4	~~29~~
5	33, 41, 39
6	39
7	65
8	(47, 51, 57, 55) for Test 3

*Test 3 = 7.5, 7.6, 7.7, 4.1 - 4.6 E.C.

Also E.C. 4.7, 4.8

4.6

(4) FOIL

$(xy-1)\cdot(xy+5)$

F O I L

$xy \cdot xy = (xy)(xy) = (xy)^2$

$x^2 \cdot y^2 = (xy)^2$

$(xy)^2 + 5xy - xy - 5$

$= x^2y^2 + 4xy - 5$

$= (xy)^2 + 4xy - 5$

(5) $(pq+0.1)\cdot(-pq+0.1)$

F O I L

$-p^2q^2 + 0.1pq - 0.1pq + (0.1)^2$

(52.) $-p^2q^2 + (0.1)^2 = -p^2q + 0.01$

$(0.1)^2 = 0.1 \cdot 0.1$

$= 0.01$

0.1 ← 2 digits behind.

$+ \underline{0.1}$

0.01

← 2 places

(51.) $(5rt - 2) \cdot (4rt - 3)$

F O I L

$20r^2t^2 - 15rt - 8rt + 6$

F O I L

(54.) $20r^2t^2 - 23rt + 6$

(55.) $(6x - 2y)\cdot(5x - 3y)$

F O I L

$30x^2 - 18xy - 10xy + 6y^2$

$= 30x^2 - 28xy + 6y^2$

4.7 E.C. T3

4.8 E.C. T3

1. $\dfrac{40x^6 - 25x^3}{5}$

$= \dfrac{40x^6}{5} - \dfrac{25x^3}{5}$

$= 8x^6 - 5x^3$

2. $(42x^5 - 36x^3 + 9x^2) \div (6x^2)$

$= \dfrac{42x^5 - 36x^3 + 9x^2}{6x^2}$

$= 7x^3 - 6x + \dfrac{3}{2}$

$\frac{x^5}{x^2} = x^3$

$\frac{x^3}{x^2} = x^1$

$\frac{x^2}{x^2} = x^0$

$\frac{x^2}{x^2} = 1$

NEXT 4.7

17) 29

17. $(x^2-8x+12) \div (x-2)$

long hand division

$$x-2 \overline{)\, x^2-8x+12}$$

$x - 6$

① $\frac{x^2}{x} = x$

② $x \cdot (x-2) = x^2-2x$

③ x^2-8x

$-(x^2-2x)$

$0-6x$

$-8x-(-2x)$

$= -8x+2x$

$= -6x$

④ $-6x+12$

$-(-6x+12)$

$0 \quad 0$ ⑤

$\frac{-6x}{x} = -6$

⑤ $-6 \cdot (x-2)$

$= -6x+12$

⑥ $-6x+12$

$-(-6x+12)$

$0 \quad 0$

ANSWER:

$x-6$

OLD SKOOL

53.3...
6) 320
-30↓
20
18↓
20

3a + 1 R3

(2a) (2a + 5) 6a² + 17a + 8
-(6a² + 15a) ↓
2a + 8
-(2a + 5)
3

(1) $\frac{6a^2}{2a} = 3a$

(2) 3a · (2a + 5)
6a² + 15a

(3) 6a² + 17a
-(6a² + 15a)
2a

(4) $\frac{2a}{2a} = 1$

(5) 1 · (2a + 5)
= 2a + 5

(6) 2a + 8
-(2a + 5)

Quiz 7, 8, 9

Quiz 7 10-25-13 link

Quiz 8 11-04-13 link

Quiz 9 11-06-13 link

↑ samples TS exam

Quiz 7 study 5 to 12. by seeing links to lecture on 7.5 → send links

Quiz 7 1-4 sec 7.6 → send links

Send you a special

page:

(1) links to lectures on 7.5, 7.6 (Quiz 7 and Quiz 8)

(2.) links to Quiz 7, 8, 9

(3.) link to solutions to Quiz 8, 9 (regular credit stuff

(4.) link to tonight's lecture on 4.6, 4.7 E.C.

Quiz 8 Regular credit

7.7, 4e/

7.7

(5.) DIRECT VARIATION: $y = k \cdot x$

$y = 30$ when $x = 3$

$30 = k \cdot 3$

$10 = k$

$y = 10 \cdot x$

FOLLOW UP: FIND y when $x = 6$

$y = 10 \cdot 6 = (60)$

(6) $y = 500$ when $x = 60$

$500 = k \cdot 60$

$\frac{500}{60} = k = 8.3$

$y = 8.3 \cdot x$

$\frac{50\text{¢}}{60\text{¢}}$

$8.33\ldots$

$6\overline{)50.00}$

$48\downarrow$

20

$18\downarrow$

20

inverse variation

$$y = \frac{k}{x}$$

(4.) $y = 8$ when $x = 3$

$$8 = \frac{k}{3}$$

$$3 \cdot 8 = 3 \cdot \frac{k}{3}$$

$$24 = k$$

$$y = \frac{24}{x}$$

follow $y = ?$ when $x = 2$

$$y = \frac{24}{2} = 12$$

(8) $y = \frac{k}{x}$

$0.2 = \frac{k}{5}$

$5 \cdot 0.2 = 5 \cdot \frac{k}{5}$

$1 = k$

$y = \frac{1}{x}$

4a/

(9.) (a) $8^4 \cdot 8^3 \neq 8^{12}$

$= 8^{7}$ $4+3=7$

(c.) $\frac{(3m)^9}{(3m)^8} = (3m)^{9-8} = (3m)^1$

$= 3m$

(b) on next page

(9) (b) $\dfrac{a^{10} \cdot b^{12}}{a^2 \cdot b^0}$

$= a^{10-2} \cdot b^{12-0}$

$= a^8 \cdot b^{12}$

ALT-1 $\dfrac{a^{10} \cdot b^{12}}{a^2 \cdot 1}$; $b^0 = 1$

$= a^8 \cdot b^{12}$ $\qquad \dfrac{a^8 \cdot b^{12}}{1} = b^{12}$

---

(10) (a) $(8+5)^0 = 1 = (13)^0 = 1$

(b) $(a^5)^8 = a^{5 \cdot 8} = a^{40}$

(c) $(-4m^4)^2 = (-4)^2 \cdot (m^4)^2$

$= 16 \cdot m^8$

$(ab)^n = (a)^n (b)^n$

(11) (c)

$(a^4 b^6) \cdot (a^2 b)^5$

$= (a^4 \cdot b^6) \cdot (a^2)^5 \cdot (b)^5$ ← see #10 (c)

$= a^4 \cdot b^6 \cdot a^{10} \cdot b^5$

$= a^{14} \cdot b^{11}$

$a^4 \cdot a^{10} = a^{14}$

$b^6 \cdot b^5 = b^{11}$

(b) $\left(\frac{4x}{3}\right)^3 = \frac{(4x)^3}{3^3} = \frac{4^3 \cdot x^3}{3^3}$

$= \boxed{\frac{64 \cdot x^3}{27}}$

$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

$(ab)^n = a^n b^n$

(12.)

$$\left(\frac{-4p^5}{3m^2n^3}\right)^3$$

don't panic

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$= \frac{(-4p^5)^3}{(3\cdot m^2\cdot n^3)^3}$$

$$(ab)^n = a^n b^n$$

$$= \frac{(-4)^3\cdot(p^5)^3}{3^3\cdot(m^2)^3\cdot(n^3)^3}$$

$$= \frac{-64\cdot p^{15}}{27\cdot m^6\cdot n^9}$$

see #11(a)

Quiz 9 (eeQ. credit)

1. $9x - 2x^2 + 4x^2 + 2x$

$2x^2$

$11x$

$= \boxed{2x^2 + 11x}$

→ descending order of powers

2. $12x - 2x^2 + 32x$

$44x$

$= -2x^2 + 44x$

3. $9x^8 - 6x^4 + 2x^2 + 33 + 8x^7 + 4x^2 + 2x + 3$

$9x^8 - 6x^4 + 6x^2 + 66 + 8x^7 + 2x$

$= 9x^8 + 8x^7 - 6x^4 + 6x^2 + 2x + 66$

(4.) 4.3

$(2x^2 - 4x + 15) + (20x^2 + 14x - 14)$

$= 22x^2 + 10x + 1$

(5.) change signs

$(2x^2 - 4x + 15) - (20x^2 - 14x - 14)$

$2x^2 - 4x + 15 - 20x^2 + 14x + 14$

$= -18x^2 + 10x + 29$

(6) $(6a^8 \cdot b^7) \cdot (3a^4 \cdot b^3) = 6 \cdot 3 \cdot a^8 \cdot a^4 \cdot b^7 \cdot b^3$

$= 18 \cdot a^{12} \cdot b^{10}$

$a^8 \cdot a^4 = a^{12}$

$b^7 \cdot b^3 = b^{10}$

(7.) $5x^4(x^2 + 3x^1 - 4)$

$= 5x^6 + 15x^5 - 20x^4$

$x^{4+2} = x^6$

(8.) $(5x-2) \cdot (x^2 + 3x + 2)$

$5x^3 + 15x^2 + 10x - 2x^2 - 6x - 4$

$= 5x^3 + 13x^2 + 4x - 4$

(9.) $(x-7)\cdot(x-3)$

F O I L

$x^2 - 3x - 7x + 21$

$= x^2 - 10x + 21$

(10.) $(x+7)(x+7)$

F O I L

$x^2 + 7x + 7x + 49$

$= x^2 + 14x + 49$

(11.) $(x^2+2)\cdot(x-7)$

F O I L

$x^3 - 7x^2 + 2x - 14$

12.

(a) $(x+4)^2$

$= (x+4)(x+4)$

F O I L

$x^2 + 4x + 4x + 16$

$= x^2 + 8x + 16$

(b) $(1+3x)\cdot(1-5x^2)$

F O I L

$1 - 5x^2 + 3x - 15x^3$

$= -15x^3 - 5x^2 + 3x + 1$

(c) $(x^2-3)^2 = (x^2-3)(x^2-3)$

F O I L

$x^4 - 3x^2 - 3x^2 + 9 = x^4 - 6x^2 + 9$

(d) $(n+7)\cdot(n-7)$

F O I L

$= n^2 - 7n + 7n - 49$

Use FOIL

$= n^2 - 49$

NOTE: $(n+7)(n-7) = n^2 - 7^2$

$(a+b)(a-b) = a^2 - b^2$

(e) $(4n+7)\cdot(4n-7)$

F O I L

$4n^2 - 28n + 28n - 49$

$(4n)^2 - 28n + 28n - 49$

$\hookrightarrow 16n^2 - 49$

Note: $(4n+7)(4n-7)$

$= (4n)^2 - 7^2$

$= 16n^2 - 49$

---

(13) $(2x^2y - 4xy + 15y) + (20x^2y + 14xy - 14y)$

$= 22x^2y + 10xy + y$ see #4

(14) $(2x^2y - 4xy + 15y) - (20x^2y - 14xy^2 - 14y)$

$= 2x^2y - 4xy + 15y - 20x^2y + 14xy^2 + 14y$

$= -18x^2y - 4xy + 29y + 14xy^2$