Review Problems for Algebra II Placement Test

Part I: Simplify:

1. $\frac{2}{3}\left|8(5-2)^2+3(2)\right|$ 52
2. $5x^2+7xy-3x^2+4xy$ $2x^2+11xy$
3. $(64a^2-16ab+8)-(3a^2-4ab-13)$ $61a^2-12ab+21$
4. $(4m^3n^2)(-m^4n^5)(2mn)$ $-8m^8n^8$
5. $(3x^2)^4$ $81x^8$
6. $(-x)^2-x^2$ 0
7. $(2x+3)(5x+8)$ $10x^2+31x+24$
8. $(4y-7)^2$ $16y^2-56y+49$
9. $(a-b)(a^2+ab+b^2)$ a^3-b^3
10. $\frac{12r^{13}s^5}{-6r^7s^2}$ $-2r^6s^3$
11. $\frac{3a^8b^3}{15a^2b^{10}}$ $\frac{a^6}{5b^7}$
12. $5\sqrt{8}-3\sqrt{32}$ $-2\sqrt{2}$
13. $(2\sqrt{5}+3)(\sqrt{5}-7)$ $-11-11\sqrt{5}$
14. $\frac{9}{2\sqrt{3}}$ $\frac{3\sqrt{3}}{2}$
15. $\frac{1}{\sqrt{3}-2}$ $-2-\sqrt{3}$
16. $(m+3)(m-7)+(m-2)^2$ $2m^2-8m-17$
17. $(9x^2y^3)(-2x^5y^4)-(4x^4y^5)(-3x^3y^2)$ $-6x^7y^7$
18. $\frac{5x+2}{3}-\frac{x-1}{5}$ $\frac{22x+13}{15}$
19. $\frac{5}{x^2-9}+\frac{7}{2x+6}$ $\frac{7x-11}{2(x+3)(x-3)}$
20. $\frac{x^2+3x+2}{x^2-4}\div\frac{2x-4}{8}$ $\frac{4(x+1)}{(x-2)^2}$
21. $\frac{\frac{a+3}{6a}}{\frac{2a+6}{3a^2}}$ $\frac{a}{4}$
22. Find the slope of a line passing through $(-3,4)$ and $(2,5)$ $\frac{1}{5}$
23. Find the slope of a line whose equation is $3x-2y=10$ $\frac{3}{2}$
24. Write an equation of a line passing through $(2,-3)$ with a slope of 4. $y=4x-11$

Part II: Match the statement with the property applied.

1. $x(1)=x$ c
2. $x+(-x)=0$ f
3. $2(5x+2)=2(2+5x)$ a
4. $9a\left(\frac{1}{9a}\right)=1$ d

a. Commutative Property
b. Associative Property
c. Multiplicative Identity
d. Multiplicative Inverse
e. Distributive Property
f. Additive Inverse

Part III: Solve.

1. $2x-1=8$ $\{\frac{9}{2}\}$
2. $\frac{1}{2}x=3x+\frac{1}{5}$ $\{-\frac{2}{25}\}$
3. $5x-3=5x+2$ $\emptyset$
4. $2(x-8)+1=5(x-3)$ $\{0\}$
5. $1-3x=16$ $\{-5\}$
6. $-1\le 2x-3\le 11$ $1\le x\le 7$
7. $|x-7|=10$ $\{-3,17\}$
8. $-\frac{1}{4}k>3$ $k<-12$
9. $(2x-3)(5x+15)=0$ $\{-3,\frac{3}{2}\}$
10. $y^2-4y-12=0$ $\{-2,6\}$
11. using quadratic formula: $4t^2+t-5=0$ $\{1,-\frac{5}{4}\}$
12. $\sqrt{2x-3}=7$ $\{26\}$
13. $\frac{1}{x}=\frac{2}{x-3}$ $\{-3\}$
14. using elimination method: $\begin{matrix}2x+5y-8=0\\3=x+3y\end{matrix}$ $(9,-2)$
15. using substitution method: $\begin{matrix}y=2x-1\\2x-5y=-3\end{matrix}$ $(1,1)$
16. If you decrease the product of 16 and a number by 52, the result is 300. Find the number. 22
17. The opening of a new art exhibit had an attendance of 835 people. Four times as many people attended in the afternoon as in the morning. How many people attended in the afternoon? 668 people
18. Mary has an equal number of dimes and quarters. If she has $2.10 in all, how coins of each does she have? 6 each
19. The steamship Empress Anne sailing due west at 32 knots passed the freighter Oregon which was sailing due east at 24 knots. In how many hours after the meeting will the ships be 448 nautical miles apart? 8 hours

20. An apple has 29 more calories than a peach and 13 fewer calories than a banana. If three apples have 43 fewer calories than two bananas and two peaches, how many calories does an apple have? 75 calories
21. A chemist has 30 ounces of a solution that is 40% alcohol. How many ounces of a second solution containing 75% alcohol must be added to it to form a solution that is 60% alcohol? 40 ounces

Part IV: Factor completely.

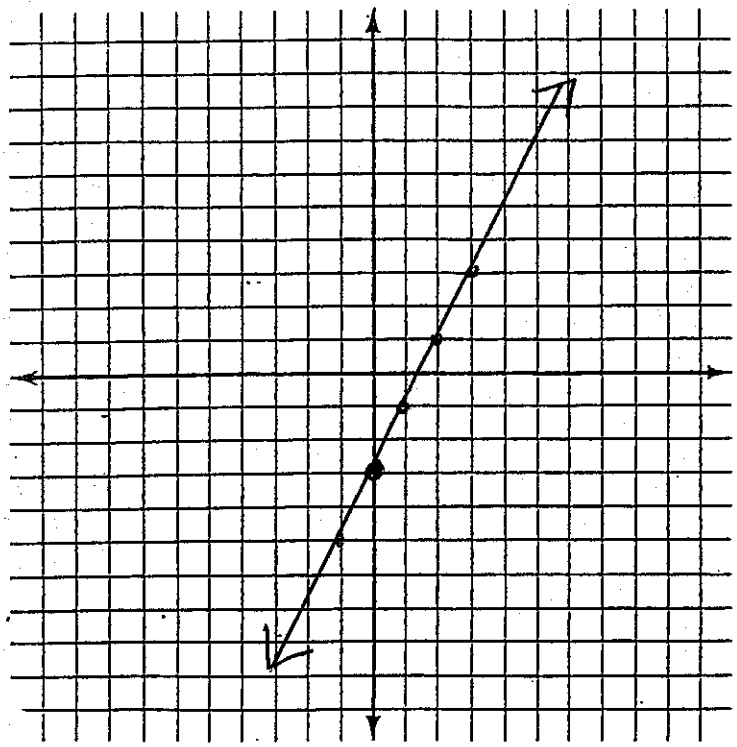
1. $16-25x^2$ $(4+5x)(4-5x)$
2. $x^2-2x-15$ $(x-5)(x+3)$
3. $12a^2b^3-15a^3b^2$ $3a^2b^2(4b-5a)$
4. x^3-x $x(x+1)(x-1)$
5. $ab+2ay-3bt-6ty$ $(b+2y)(a-3t)$

Part V: Graph. (see next page)

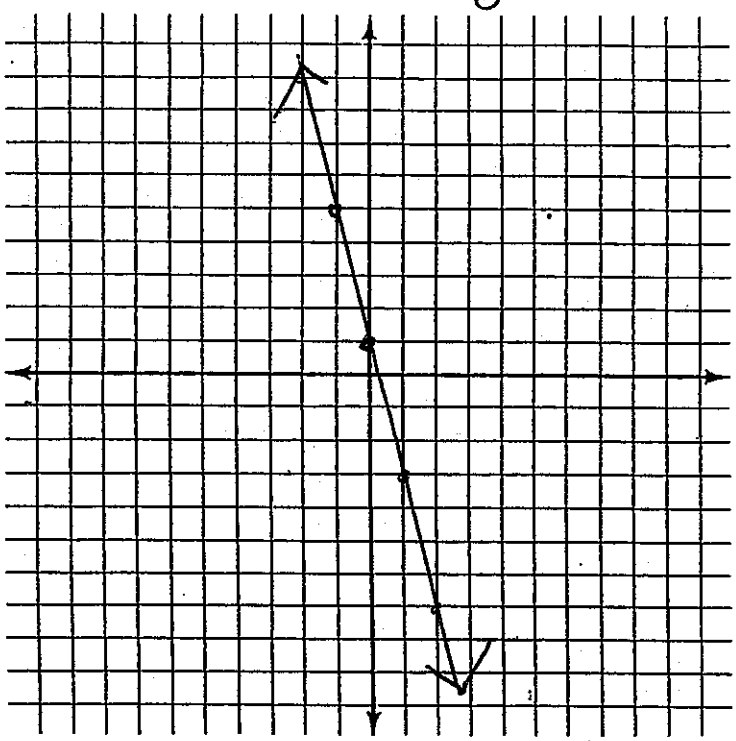
1. $y=2x-3$
2. $4x+y=1$
3. $2x-y=11$
   $3x+5y=10$
4. $y\le x+2$
   $2y+x>1$

Part V: Graph:

#1 $y = 2x - 3$



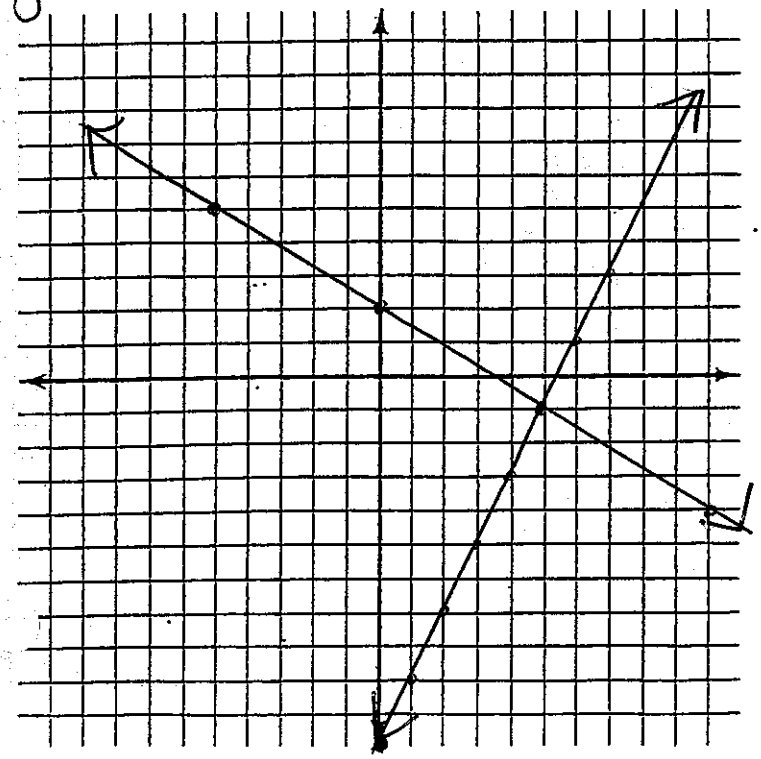
#2 $y = -4x + 1$



$y = 2x + 1$

$y = -\frac{3}{5}x + 2$

#3 $\therefore (5, -1)$



#4 $y \leq x + 2$

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